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AND

MEDICAL BULLETIN

(CONSOLIDATED)

VOL. VI.

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Original Articles

FILARIASIS; REPORT OF CASE TREATED WITH DIOXYDIAMIDOARSENOBENZOL.*

BY NOBLE P. BARNES, M.D.,

WASHINGTON, D. C.

WHILE known from antiquity, confused at times with leprosy, and a general term used by the ancients—Arabian and Greek physicians—to designate various "distempers," elephantiasis in its true sense is of modern understanding. Since this name expresses but one form of a general infection, the newer term filariasis is more acceptable.

In 1863 Demarquay discovered a larval nematode (*Microfilaria Bancrofti*) in the fluid of chylous dropsy of the tunica vaginalis. From 1866 to 1868 Wucherer found the same organism in the urine of a number of cases of chyluria. In 1870 Lewis made similar observations in India, and in 1872 discovered the blood of man to be the normal habitat of this larval parasite, which he named *"Filaria sanguinis hominis."* In 1876 Bancroft discovered the adult form and Cobbold named it *"Filaria Bancrofti."* Since that time Manson and other workers have demonstrated the mosquito to be the intermediary host. *Culex fatigans* was the first carrier discovered, but several species of mosquito may subserve.

The human circulation is the habitat of the larvæ of possibly six distinct species of filariæ. The two of pathological importance are the *Microfilaria Bancrofti,* or *nocturna,* the adult inhabiting the lymphatics of man, and *Filaria diurna,* or *loa,* which lives in the subcutaneous tissue. There is abundant proof that these are the etiological factors in endemic chyluria, lymphatic varix, lymphatic scrotum, elephantiasis, and other obscure tropical diseases.

The prevalence of *Filaria Bancrofti* is extensive in parts of the tropical and subtropical countries. One-third of the inhabitants of Samoa, the South

* Read at the Thirteenth Annual Meeting of the American Therapeutic Society, held at Montreal, Canada, May 31 and June 1, 1912.

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Sea Islands, and the Friendly Islands harbor blood filariæ. In some parts of south China and the western coast of Africa one-half of the population is thus infected. In the latter location, according to the claim of recent investigators, the men who do not have elephantiasic enlargement of the scrotum are regarded as abnormal. The prize scrotum thus far reported weighed 224 pounds and was carried about in a wheelbarrow by its proud possessor,—as one writer expresses it: "a grotesque example of satisfaction with misfortune."

The filarial periodicity is an interesting feature and occasions the addition of another word, making the full appellation *"Filaria sanguinis hominis nocturnis."* Manson has demonstrated the microfilaria in the larger arteries and lungs during the day and suggests that the object of the nightly swarming is a necessary corollary to the life habits of its liberating agent, the mosquito. That the parasites are capable of decided longevity is recognized by all observers.

True elephantiasis is never entirely recovered from; it is intermittently but progressively increasing. Treatment, medicinal, mechanical, or surgical, has been unsatisfactory or useless, and the only possible means of escape is by protection from the mosquito. I refer to this longevity in anticipation of a question that may be suggested in the following report:—

Lillian Johnson, colored, 38 years old; cook; living at No. 8 Gordon Avenue, Washington, D. C., was admitted to the Casualty Hospital October 9, 1911.

Family History.—No knowledge of grandparents. Mother died of pneumonia at 45; had been previously in good health and very fleshy. Father is a large man, was always well, and is living at the age of 89. Three sisters and four brothers, all alive and well. Tuberculosis, venereal diseases, etc., negative.

Previous History.—The patient was born at Annapolis, Maryland; she had mumps and pertussis during early childhood and entered womanhood at the age of 14. She married at 24. Her husband died six years later of apoplexy. She gave birth to two children. The first, in 1899, weighed 11 pounds, grew very rapidly, and died in its fifth month. The second, born in 1902, weighed 8 pounds, and died at the age of 4 years. This child was also very large. Both children died suddenly.

Eight years ago she ran a nail in her right leg. A month later the bone was curetted and a skin graft made. Recovery was complete and she left the hospital in five weeks. For three years she had experienced a shortness of breath on exertion. Her habits generally are good. She ingests a large amount of vegetable foods; tea and coffee in moderation; beer occasionally. She uses an excess of salt; drinks large quantities of water, and urinates eight or ten times a day. For the last ten years she has been weighing in the neighborhood of 380 pounds.

About four months ago her legs became scaly. On September 16, 1911, while running for a street car, she fell and injured her abdomen and legs. From that time she claims her feet and abdomen began to swell, the enlargement progressing steadily to the present state. The bowels have always been regular.

Patient has spent most of her life in this neighborhood. As an expert cook she is sometimes taken to the summer homes of wealthy families. Four years ago she spent the summer in Nova Scotia, the winter in Baltimore. Three years ago she was at Black Island for the summer and in Washington during the winter; two years ago at Saratoga for the summer and in Baltimore for the winter; last summer at Newport, Black Island, and New York City. About five months ago she served a stag supper at Culpepper, Virginia, this being the farthest south she has ever been. She remained in Culpepper only two days.

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Fig. 1.—Patient before arsenobenzol treatment.

Fig. 2.—Patient before arsenobenzol treatment.

Physical Examination.—Expression and general appearance good. Dorsal decubitus: Bones are large, muscles flabby, and nutrition good. Entire body is excessively fat. Skin is warm and moist, except on lower legs, where it is dry and scaly. Hair is thick and in good condition. Finger-nails normal. Toe-nails thick and brittle. Right leg shows scars of a previous operation. Entire right thigh and leg and left leg greatly enlarged. Right patella not palpable. Abdomen large. Heart and lungs normal.

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Measurements in Inches:—

	Right.	Left.
Thigh	32	31
Midthigh	36	29
Knee	32	18
Calf	31	27
Ankle	20	21
Instep	12	15½

On October 19, beginning at 8 P.M., hourly examinations of the blood were made and by midnight microfilaria recognized. Two hours later they were sufficiently numerous to make us lose sight of everything else in the field.

Blood Examination:—

Hemoglobin	30 per cent. Dare
Red cells	3,500,000
Leucocytes	11,500
Malaria	Negative

Later the microfilariæ were found in the patient's stools.

A few days after, the patient was found to be pregnant. On December 9, after an indifferent labor of forty-eight hours, forceps were applied and a 7½-pound male child delivered. The mother's urine at this time contained albumin, blood, and squamous epithelium.

Recovery from labor was slow and uneventful. Microfilariæ were found in the meconium and the blood from the cord. The mother's milk was examined from time to time and the organism found.

The child's blood was examined two weeks after birth and again four weeks later; each time the specimens showed the presence of microfilariæ. There was a considerable enlargement of the cervical, facial, axillary, and inguinal glands. This glandular thickening and a puffiness about the child's face and neck were the only symptoms manifest.

December 25, at 11 P.M., 6 dg. of dioxydiamidoarsenobenzol were given intravenously. An hour later the patient had a severe chill and fever. Headache was constant for the next twenty-four hours. This was followed by considerable drowsiness. By the 29th the patient was comfortable and apparently improved. The areas of induration on the legs were softer and painless. Distress and tenderness in the groin had disappeared. Patient felt much stronger and thought she was much lighter in weight.

January 10, 1912, the patient was up and walking about the room. Repeated examinations of the blood demonstrated microfilariæ still present, but in less number.

March 27, at 9 A.M., another 6 dg. of dioxydiamidoarsenobenzol was administered intravenously. At 2 P.M. there were severe headaches and chills, the temperature reaching 102.6° F.; pulse, 110. She had a comfortable night, notwithstanding a most profuse perspiration. On the following day she had quite recovered from the treatment and has since continued to improve.

April 26, after an all-night session, we were unable to locate a single microfilaria. The test was again repeated on May 10, with similar results. On the 24th, several microfilariæ were found on the 1 o'clock slides, and the medication was to have been repeated on the 29th. The weight of the patient had fallen from 400 pounds to 244 pounds, and her measurements on May 25 were as follows:—

	Right.	Left.
Thigh	32	31
Midthigh	25½	27
Knee	22	18
Calf	21	18
Ankle	14	13½
Instep	12	12¾

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Fig. 3.—Patient after arsenobenzol injections.

Fig. 4.—Patient after arsenobenzol injections.

Blood examination on the same day showed:—

Hemoglobin	80 per cent.
Red cells	6,500,000
Leucocytes	5,800

The child's condition is now perfectly normal, as shown by the photograph,—weight 15½ pounds on May 25, 1912.

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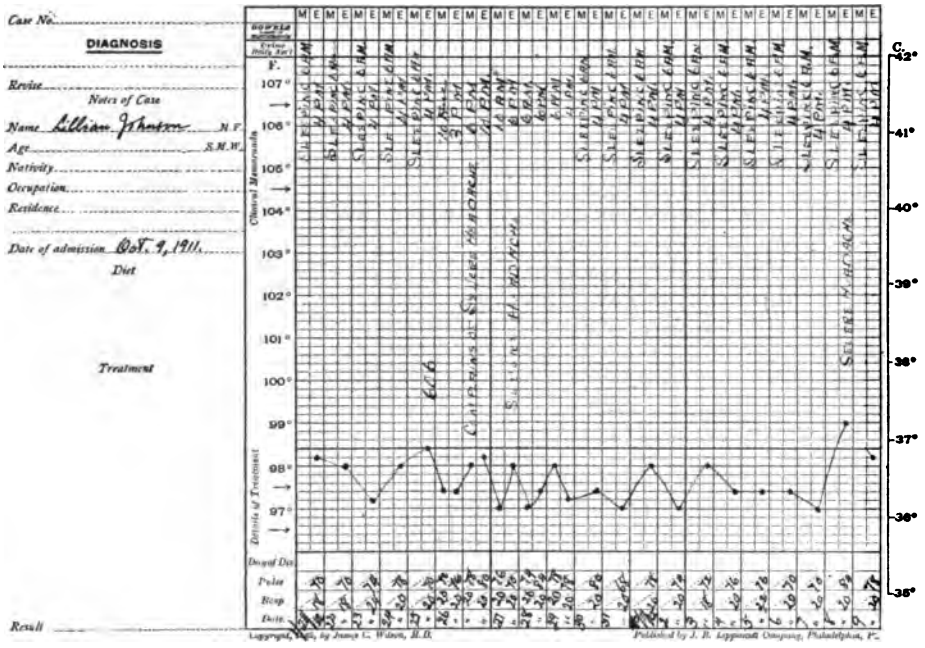
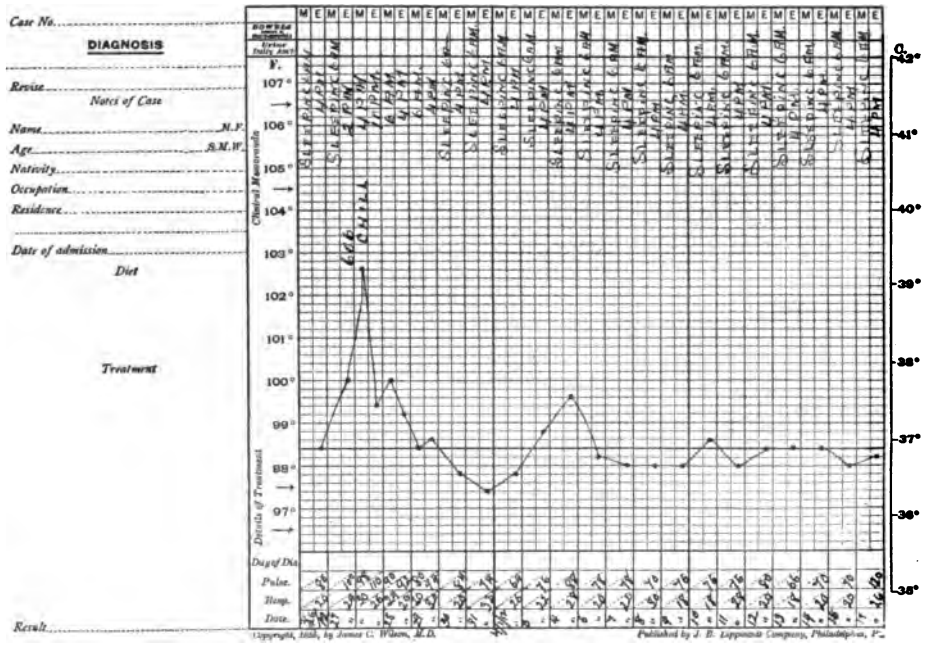
RECORDS OF TEMPERATURE AFTER ARSENOBENZOL INJECTIONS.





DISCUSSION.

Dr. Frederic H. Gerrish, of Portland, Me., said that the subject of filariasis had been more or less of a study with him for a number of years. The explanation of the manner in which dioxydiamidoarsenobenzol produced the results noted in this case would

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be extremely interesting. If it killed the *Filaria Bancrofti*, it effected a cure where there had never been a cure before. If it had not killed, but simply "scotched the snake," further trouble might be expected. This worm was possessed of great longevity, and it was possible that it might go on breeding as long as the individual harboring it lived. It would also be very interesting to know how Dr. Barnes's patient contracted her disease, and he would like to know whether there were any other cases of filariasis in the neighborhood. There were 11 varieties of mosquito capable of transmitting the filaria, but there was no variety of mosquito which was able to travel a great distance from the place of its birth. It would, furthermore, be interesting to know whether from the result in this case it could be assumed that arsenobenzol was a useful remedy in the treatment of obesity.

Dr. Barnes said that in this case the skin was very much relaxed. He had gone into the matter of travel thoroughly, in order to try to trace the origin of the disease. It was possible, he thought, that a mosquito might be carried for a long distance in fruit, etc. He had been entirely unable to locate the place of origin, and, as far as he knew, there was no other case of filariasis in Washington or its vicinity. There must be, no doubt, some limit to the life-cycle of this worm. Whether he had succeeded in destroying the parent worms or not, a large number of the microfilariæ had certainly been got rid of. It seemed to him that the dead worm (which was of comparatively small size) might be absorbed, and that thus it would not interfere with the circulation. So far as recommending dioxydiamidoarsenobenzol as a remedy for this disease was concerned, he was simply reporting a case in which it had apparently produced a marked result, and he could only say that he would continue his careful study of this patient and at some future time give the outcome. In accordance with Dr. Gerrish's suggestion, he would also try the remedy in question in the treatment of obesity.

In reply to an inquiry from Dr. Gerrish, *Dr. Barnes* stated that there was no sign of syphilis about the baby.

Dr. Blackader said that, as we knew that arsenic was excreted in the mother's milk, it would be interesting to have this woman's milk examined from time to time.

Dr. Barnes said he would be glad to have the milk carefully watched.

AN EXPERIMENT TO TEST THE EFFECT OF OIL OF ORANGE ON THE NASAL MUCOSA, IN CONNECTION WITH ITS EFFECT ON THE REFLEXES OF DILATATION OF THE LUNGS AND STOMACH. AN ATTEMPT TO EXPLAIN WHY OIL OF ORANGE FACILITATES ETHER ANESTHESIA.

By GEORGE O. JARVIS, M.D.,

PHILADELPHIA, PA.,

WITH ADDENDUM BY

ALBERT ABRAMS, M.D.,

SAN FRANCISCO, CAL.

Gwathmey[1] has shown that when oil of orange is used with ether the patients are anesthetized with less discomfort, with the use of only about half the quantity of ether otherwise required, and with no preliminary stage of excitement; there is also quick recovery from anesthesia, without nausea or

[1] Jour. Amer. Med. Assoc., Dec. 17, 1901, and Editorial, N. Y. Med. Jour., Sept. 14, 1912.

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vomiting. He uses 1 ounce of oil of orange and 3 ounces of water in the hot-water bottle of his three-bottle vapor anesthetic apparatus, and ether in the other two bottles. By this means the odor of the anesthetic is so disguised that the patient is unable to tell when the anesthesia is begun.

It occurred to me to try the effect of the inhalation of oil of orange upon the stomach reflexes, knowing from previous experience and from the work of Albert Abrams that the nausea of ether anesthesia is intimately connected with reflex dilatation of the stomach, and the shock with reflex dilatation of the stomach and the rest of the splanchnic area.

A young man of 24 was selected as a subject for the experiment. He had a thin-walled abdomen, which rendered percussion easy and accurate. His stomach was slightly, if at all, displaced. There was no dilatation of the organ. The accuracy of the percussion was checked by radiograms, and the results found to be correct.

The stomach was outlined in a standing position. One hour after eating the subject inhaled ether in strong vapor for three and a half minutes. Immediately and again after five minutes the stomach was percussed and the outline marked upon the skin. The stomach was found to be dilated and the amplitude of the reflex was 4.5 cm.

On the next day, one hour and fifteen minutes after dinner, the stomach was again outlined and its borders marked upon the abdominal wall. Oil of orange was inhaled for three minutes, and this was followed immediately by the inhalation of ether, 9 parts, and oil of orange, 1 part, for three and a half minutes. The stomach was again outlined by percussion; both immediately after the inhalation of ether and again after five minutes, no dilatation was found. After a lapse of ten minutes pure ether was inhaled to the point of producing dizziness. Again no reflex of dilatation was found. To render the test conclusive, concussion of the ninth to the twelfth thoracic spines was practised, which produced a dilatation of 4.5 cm. Strong ether vapor inhaled for three and a half minutes produced only a slight further dilatation. After ten minutes, concussion of the first to the fourth lumbar vertebræ was employed, which restored the lower border of the stomach to the line drawn on the skin to mark its lower border before either the concussion or the inhalation of ether.

On the fourth day the effect of the inhalation of oil of orange on the lung reflexes was tried. Before using the oil of orange the lung reflex of dilatation was tested by plugging both nostrils with cotton, and was found to measure 4.5 cm. Oil of orange was then inhaled for three and a half minutes, the nose was stuffed with cotton on both sides, and upon testing again the lung reflex of dilatation was found to be 1 cm.

Conclusions.

1. The essential oil of orange inhibits nasal reflexes elicited by ether alone.

2. The inhalation of oil of orange previous to the inhalation of ether partially suppresses the reflexes of dilatation of the lungs and stomach produced by ether vapor.

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ADDENDUM.

On page 319 of my work on "Spondylotherapy," it is shown that many irritant vapors, notably ether, are capable of evoking definite visceral reflexes. This refers with special cogency to ether; the effects with chloroform are similar, though less potential. Coincident with the inhalation, there occurs an enormous dilatation of the stomach, which is of considerable duration. It is also shown that the *"asthma from odors"* is due to the pressure of an acutely dilated stomach on the heart. It is shown, furthermore, that postoperative acute gastrectasis can be inhibited in some instances by concussion of the first three lumbar spines, which evokes the counterreflex of stomach contraction.

In all these instances the supposititious gastrodilator fibers in the vagus were not irritated reflexly if the nasal mucosa were previously cocainized.

I was able to corroborate the investigations of Jarvis. In addition I found that oil of orange by inhalation evoked a veritable lung reflex of contraction somewhat less accentuated than that resulting from the hypodermic employment of adrenalin.

By aid of my reflexometer, it was found that depression of vagus tone (vagus hypotonia) was less pronounced when ether was combined with oil of orange. It was likewise noted under the microscope that, with ether alone, the motion of the ciliary epithelial cells was inhibited, whereas the addition of orange oil to the ether augmented the motion in question.

MODERN METHODS OF DRUG STANDARDIZATION.*

BY F. E. STEWART, M.D., PH.G.,

GERMANTOWN, PA.,

WITH THE COLLABORATION OF

A. PARKER HITCHENS, M.D.; W. F. ELGIN, M.D.; CHAS. E. VANDERKLEED, PHAR.D., AND P. S. PITTENGER, PHAR.D.

MY object in presenting this paper is to place in the hands of the American Therapeutic Society a plan for teaching drug standardization which has been employed during the past winter by myself and associates in lectures before the Philadelphia College of Pharmacy, Temple University, and the Pharmaceutical School of the Medico-Chirurgical College, and also utilized by several of us in papers read before medical and pharmaceutic societies.

The subject-matter is largely a compilation derived from many sources, both in this country and abroad. The data have been collected and classified for the convenience of teaching students, especially in pharmaceutic colleges. However, judging from the want of appreciation of the wide variation in medicinal drugs, chemicals, and preparations of the same, by the medical

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* Read at the Thirteenth Annual Meeting of the American Therapeutic Society, held in Montreal, May 31 and June 1, 1912.

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profession, much of the information in the paper could be advantageously used for teaching the medical students.

Any and all methods for improving the character, quality, and strength of materia-medica products and securing their uniformity may be properly considered as methods of standardization, but, in the specific sense of the term, standardization means the adoption of definite standards and conformity thereto.

The necessity for securing definitions in the character of drugs has never been fully realized. No one has questioned the necessity for preventing gross adulteration and sophistication, but consideration of standardization by which drugs are rendered instruments of precision has never been given proper consideration until very recent times.

It must be apparent to any thinking person that adulteration of drugs or their sophistication must of necessity materially influence their physiologic action and therapeutic value. Even the impurities resulting from the processes of preparing medicinal chemicals may seriously modify their therapeutic effects. Variation in active principles in medicinal plants is another factor of importance in considering the question of standardization.

In no better way can we obtain an adequate idea of the subject of modern drug standardization than by a brief review of the standardization work of the United States Pharmacopeial Convention and its Committee of Revision during the past two decades.

Long before the enactment of the national pure food and drug law of June 30, 1906, necessity for accurately defining the limits of purity permissible in official chemical substances became so apparent that the Pharmacopeial Convention of 1880, and its Committee of Revision, met the question by inserting more definite descriptions with qualitative and quantitative tests in the sixth edition of the Pharmacopeia.

In the seventh edition (U. S. P. of 1890) this plan was still further elaborated. In the eighth edition (U. S. P. of 1900) there was added what has come to be known as the purity standard or purity "rubric," which is placed in large type immediately before the description, and which defines the percentage of small quantities of permissible innocuous impurities that do not materially affect the medicinal action or interfere with pharmaceutic uses.

Before the passage of the pure food and drugs act of June 30, 1906, conformance with the standards of the U. S. P. on the part of the manufacturers was purely voluntary. Since that time it has become compulsory and the manufacturers recognize its authority. As long as the standards adopted are practical, manufacturers engaged in the chemical and pharmaceutic industries will continue to favor a strict application of the law, and it is safe to state that they would seriously object to its repeal.

But there is another class of manufacturers dealing with materia-medica products, namely, the retail druggists, who are vitally interested in the question of standardization as applied to so-called galenical preparations, namely, preparations of vegetable drugs, such as tinctures, fluidextracts, extracts, pills, etc. The great question which the Pharmacopeial Convention of 1890 and its Committee of Revision had to face pertained to the standardization of vegetable

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drugs and galenical preparations. The principal opposition came from the retail druggists, who believed that the adoption of standards for galenicals would seriously injure the retailers professionally and financially. They prophesied that their business of manufacturing these products would be taken away from them by the great manufacturing houses, if such standards were adopted, and their vocation would be wiped out.

However, these objections were finally overcome, and standardization was extended more generally to galenical preparations.

The results proved so beneficial to all concerned that the Convention of 1900 instructed the Committee of Revision to "append assay processes to as many of the potent drugs and preparations made therefrom as it may be found possible, providing that the processes of assay are reasonably simple both as to methods and apparatus required, and yield fairly uniform results in different hands." It thus became incumbent upon the Committee to make a thorough study of many assay processes, which led to the introduction into the present Pharmacopeia (eighth) of assays for the following twenty drugs and their thirty-seven galenical preparations: aconite, belladonna leaves, belladonna root, cinchona, red cinchona, coca, colchicum corm, colchicum seed, conium, guarana, hydrastis, hyoscyamus, ipecac, jalap, nux vomica, opium, physostigma, pilocarpus, scopola, and stramonium.

There are several potent and important drugs which do not admit of standardization by chemical assay and are therefore not included in this list. I refer to epinephrin, digitalis, apocynum, convallaria, geranium, squill, strophanthus, ergot, cannabis, antitoxins, serums, vaccines, etc. During the past two decades physiologic or pharmacodynamic methods have been sufficiently perfected to warrant the introduction of more of them into the Pharmacopeia, now undergoing revision.

The necessity for such standards becomes the more apparent when one realizes the enormous differences in the amounts of active principles in vegetable drugs.

One of the most important drugs in the Pharmacopeia is digitalis. Digitalis varies widely in the amount of glucosids present, so that the tinctures of digitalis on the market are far from uniform in composition. It is well known that this variation is as high as 300 or 400 per cent. The tinctures of strophanthus on the market may vary 6000 per cent. in strength.[1] Many other drugs show wide variation and preparations from them are far from uniform in composition. The chemical assay and standardization of some of the most important drugs is impracticable, owing to their peculiar constitution. Digitalis is one of these drugs. Ergot is another. Methods of physiologic standardization have therefore been adopted for insuring the activity and to a certain extent the uniformity of their preparations. The subject of physiologic and pharmacodynamic standardization will be taken up under its proper head.

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[1] Edmunds and Hale: Hyg. Lab. Bull.

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Steps in Standardization.

The Question of Nomenclature.—The first step in standardizing a drug consists in giving it a name conformable with scientific nomenclature. Every medicinal drug, chemical and pharmaceutic preparation must of necessity be provided with a name by which it may be recognized and specifically designated. As progress in the science of materia medica and in the pharmacologic arts is dependent upon the impartial discussion of the drug or preparation in question by persons expert in the knowledge of pharmacognosy, pharmacy, pharmacodynamics, and pharmacotherapy, it logically follows that the name must be regarded as common property and equally free to all who have a right to make and sell the product under discussion.

Tests for Identity.—The next step consists in providing tests for identity. The name of the product must always mean the same identical thing, or there can be no standard.

Tests for Purity.—The next step consists in fixing tests for purity. Adulterations, sophistications, and impurities remaining in the products, due to want of care or to neglect of means for their removal, must be considered and tests which will guard against them generally adopted.

Standardization also consists in reducing this knowledge to the law, embodying it in system, and teaching it to the medical and pharmaceutic professions by means of schools and the press.

It is necessary that educational institutions shall be protected from the dangers of teaching the errors of commercial exploitation. This can only be accomplished by limiting the materia-medica supply business to licensed practitioners, properly qualified by education and training to select, prepare, preserve, compound, and dispense medicines and apply them to the treatment of the sick. No exception should be made for the so-called proprietary-medicine interests. No exception should be made for wholesale druggists or jobbing houses. The entire business should be under the control of persons who are properly qualified and licensed to practise, whether such practice is conducted at wholesale or retail.

Dependent upon drug standardization is the Pharmacopeia; dependent upon this is the very existence of pharmacy, and upon this depends drug therapeutics. Without standardization, medicine would go back to the condition of the Indian medicine man and the conjuring priest; without it pharmacy would return to the condition of the ancient apothecary, who dispensed his herbs and ointments to an ignorant and credulous public and created a demand for his wares by mystery and pretense.

Opposed to drug standardization are ignorance, credulity, and greed; opposed to it are those who regard pharmacy as a commercial business in drugs and medicines, and who create a demand by misleading claims of curative value, whether orally or by printed labels, circulars, or advertisements; opposed to it are all who are exploiting the sick-room for gain.

To sum up: Drug standardization, in its large and comprehensive meaning, consists in fixing a nomenclature for medicinal drugs, chemicals, and

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pharmaceutic preparations; in providing methods for insuring uniformity in composition, in physiologic action, and therapeutic effect; in adjusting finished products to fixed standards and in devising means for keeping them there for a sufficient length of time to permit their proper application as therapeutic agents; in reducing this knowledge to law and embodying it in system, that we may have a science of materia medica; in embodying this knowledge in textbooks and teaching it to the medical and pharmaceutic professions, so that it may be used by physicians and pharmacists in the practice of their respective arts. Therefore, the importance of drug standardization cannot be overestimated.

Methods of Standardization.

Having considered the meanings of the term "Drug Standardization," let us now consider the modern methods employed for standardizing drugs and rendering them instruments of precision.

1. *Chemical Standardization* means adjustment to adopted standards of purity and strength as determined by the application of chemical processes. It includes the determination of the identity, purity, and strength of medicinal chemicals by qualitative and quantitative tests, and the estimation of active principles in drugs by chemical assays.

2. *Pharmacognostic or Botanic Standardization* is illustrated by the official definitions of drugs given in the Pharmacopeia. When the Pharmacopeia defines cascara sagrada as the "dried bark of *Rhamnus Purshiana*" it means that and nothing else. No other species of *Rhamnus* or other part of the plant may be substituted without danger of prosecution under the pure food and drug laws. Therefore, cascara sagrada is botanically standardized by the Pharmacopeia.

3. *Pharmacologic or Physiologic Standardization* may, in a general way, be applied to all medicinal drugs and chemicals and preparations of the same, including antitoxins, serums, vaccines, and other so-called biologic products. It consists in qualitatively determining the potency or drug power upon healthy living tissues for the purpose of ascertaining whether the drug is active, and, whenever possible, in measuring quantitatively the activity, and adjusting the product accordingly to a fixed and definite standard of strength.

Pharmacodynamic standardization is particularly applicable to the following drugs:—

1. The heart group: digitalis, strophanthus, apocynum, squill, epinephrin, aconite, and gelsemium. 2. Ergot. 3. Cannabis. 4. Antitoxins, serums, etc.

The methods available for standardization of vegetable drugs are as follows:—

a. Toxic method. For this purpose frogs, guinea-pigs, or other animals are used. Examples are Houghton's frog method, Hatcher's cat method, and the guinea-pig method of Reed and Vanderkleed for standardizing the heart group.

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b. Method of determining the amount of drug or preparation required to produce some specific effect upon the normal animal. Examples are the cock's-comb method for ergot; the assay of cannabis indica by testing its activity upon dogs; the blood-pressure method for standardizing epinephrin, ergot, digitalis, etc., and the uterine method of standardizing ergot.

c. Method of determining the amount required to produce a definite effect upon an isolated organ. Examples: the isolated-uterus method for testing ergot, and the perfusion method for the heart group.

d. Certain *methods* may be *combined for checking purposes,* as indicated in the following table[2]:—

Preparation.	Chemical assay: Gm. digitoxin in 100 c.c.	Physiologic assay: Amount to kill 240-Gm. pig in 2 hours.	Product of figures of columns 1 and 2.
1. U. S. P. tincture	0.0377	0.6 c.c.	0.02262
2. U. S. P. tincture	0.023	1 to 1.25 c.c.	0.02587
3. U. S. P. tincture	0.0277	0.75 c.c.	0.02077
4. U. S. P. tincture	0.0254	1 c.c.	0.02540
5. Fat-free tincture	0.027	1 to 1.25 c.c.	0.02025
6. Fluidextract	0.264	0.1 c.c.	0.02640
7. Fluidextract	0.2405	0.09 to 0.1 c.c.	0.02285
8. Fluidextract	0.234	0.08 c.c.	0.01872
9. Powdered extract	(1.061 per cent.)	0.019 to 0.025 Gm.	0.02334
			Average. 0.02291

e. The Bacterial-count Method of Standardization is used in preparing bacterial vaccines. The counting may be readily accomplished by using a microscope fitted with an Ehrlich eye-piece, and counting the number of bacteria and red blood-corpuscles in a smear made from a mixture of equal parts of blood and bacterial emulsion. Several counts are made of corpuscles and bacteria, and the columns are added. Then by the equation: the total number of red corpuscles is to the amount of bacteria as 5 million (the number of red corpuscles in 1 cu. mm. of blood) is to x, the number of bacteria in 1 cu. mm. of bacterial emulsion is determined. This, multiplied by 1000, gives the number per cu. cm.

f. Standardization by Testing for the Absence of Contaminating Bacteria.—Anthrax vaccine, antistreptococcic serum, rabies vaccine, and the tuberculins are tested in this manner.

g. Serologic Standardization.—The strength of antidysenteric and of antimeningitis sera, the Noguchi test for syphilis, and the Bass test and Widal reaction for typhoid fever are determined serologically.

h. Therapodynamic Standardization is dependent upon the study of diseased tissues in contradistinction to pharmacodynamic standardization, which is dependent upon the study of drugs on healthy tissues. Testing the activity of tuberculin upon persons known to be infected with tubercle bacilli is an example.

[2] Reed and Vanderkleed: Amer. Jour. Pharm.

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i. Clinical Standardization is closely related to therapodynamic standardization, from which it differs in one respect, namely, that the object of therapodynamic standardization is to determine the activity of individual lots of the drug or preparation tested by observing, and if possible measuring, its effects upon diseased tissues, while the object of clinical standardization is to determine the value of a drug as a therapeutic agent.

CLASSIFICATION.

The following tabulated classification of the subject of my paper has been in use during the past winter in lecturing to students at the Philadelphia College of Pharmacy, Temple University, and the Pharmaceutical School of the Medico-Chirurgical College of Philadelphia:—

DRUG STANDARDIZATION.

I. General definition:—
   Any and all methods for improving the character, quality, and strength of drugs.
II. Specific definition:—
   Adoption of definite standards for drugs and conformity thereto.
III. Necessity for standardization:—
   Wide variation in drugs and preparations due to:—
   (*a*) Adulteration or sophistication.
   (*b*) Impurities.
   (*c*) Variation in active principles (ex.: tincture of digitalis varies 300 per cent.; tincture of strophanthus varies 6000 per cent.).
   (*d*) Ignorance of collectors.
IV. History of standardization in the U. S. P. from 1890 to 1910.
V. Methods of standardization:—
   1. Chemical.
      (*a*) Qualitative tests.
      (*b*) Quantitative assays.
   2. Pharmacognostic or botanic.
      (*a*) Official definition of U. S. P.
   3. Pharmacodynamic or physiologic.
      (*a*) Meaning
         1. Testing activity (qualitative).
         2. Testing amount of activity (quantitative).
      (*b*) Classes of drugs to which applicable:—
         1. *Heart group:* digitalis, strophanthus, apocynum, squill, convallaria, epinephrin, aconite, gelsemium.
         2. Ergot.
         3. Cannabis.
         4. Antitoxins, serums, etc.
      (*c*) *Methods for standardization of vegetable drugs:*—
         1. Toxic method.
         2. Determining the amount of drug or preparation required to produce specific effect upon the normal animal.
         3. Determining amount required to produce a definite effect upon an isolated organ.
         4. Combination of methods for control.
         5. Bacterial count method.

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6. Standardization by testing for the absence of contaminating bacteria.
7. Serologic.
8. Therapodynamic.
9. Clinical.

4. Bacterial count.
5. Freedom from contaminating bacteria.
6. Serologic.
7. Therapodynamic.
8. Clinical.

Chemical Standardization.

It is obvious that space will not permit a detailed outline or description of the methods of chemical standardization in this paper, nor indeed does its scope render this necessary. Methods for the determination of the identity, purity, and strength of medicinal chemicals and standards for them are well exemplified in the United States Pharmacopeia, and the extension of this work to the unofficial materia medica, new and old, is rapidly being brought about by the American Medical Association and the American Pharmaceutical Association,—the former through its Council on Pharmacy and Chemistry, and the latter through its Committee on Unofficial Standards. The Council of the American Medical Association publishes annually a revised edition of "New and Non-official Remedies" which, though by no means complete, includes a very large number of the more important newer remedies, both uncontrolled and proprietary, providing them with tests for identity, purity, and strength and establishing standards. On the other hand, the Committee on Unofficial Standards is doing for practically all the older products used in medicine not official in the Pharmacopeia what the Council is doing for the newer remedies, providing them with accurate nomenclature, descriptions, and standards, and outlining chemical tests for identity, purity, and strength. The monographs bearing on these products are now appearing in installments in the official journal of the American Pharmaceutical Association, and when completed will form, together with "New and Non-official Remedies," a most valuable adjunct to the United States Pharmacopeia now undergoing revision.

Neither will it be possible to enter here into a detailed description of the various chemical processes used in pharmaceutic assaying, *i.e.*, the estimation of the medicinally active constituents of drugs and their preparations. The actual methods used are well exemplified by the official directions for the assay of such drugs as belladonna, cinchona, nux vomica, and opium. There are, however, certain general facts and underlying principles concerning which the therapeutist should have knowledge, and in discussing pharmaceutic assaying by chemical means it is our purpose briefly to consider these general truths.

Pharmaceutic assaying may be defined as the art of determining the amounts of medicinally active constituents of drugs and their preparations. As such it is an exceedingly important link in the chain of progress which is so rapidly binding together medicine and pharmacy under the inclusive science

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of pharmacology. Progress in therapy is largely dependent upon the uniformity of the medicinal agents which physicians employ. The absolute necessity for the standardization of pharmaceutic products is therefore apparent. The argument that therapeutists must experimentally determine the proper dosage of an agent to fit the needs of each particular case is no excuse for the tolerance of variation in the strength and potency of the remedy itself; every possible variable should be eliminated in an effort to reduce therapeutics as nearly to an exact science as is possible.

The first requisite for the chemical standardization of complex vegetable drugs and their preparations, therefore, is to know exactly what the "medicinally active constituent" or "constituents" are. For this reason it is highly important that pharmaceutic assaying be developed and improved by the cooperation of the chemist and the pharmacologist.

It must be remembered that the principal end to be accomplished by the assay of a preparation is to secure a *means of measuring its therapeutic activity.* Hence an assay fails of its purpose unless some direct and constant ratio exists between the figures obtained by the assay process and the therapeutic activity.

Having secured such a ratio, the assay process then, and only then, becomes of value. However, when a fairly constant ratio has been established between the results of an assay process and pharmacodynamic activity, such process becomes of unquestioned value,—whether or not the constituent actually determined represents the entire activity of the drug, or even whether or not it be the principal medicinal constituent. The physician is not concerned directly with the actual percentage of alkaloid, or glucosid, or resin which a drug or preparation may contain: he is concerned only that the adjustment of a preparation to such a percentage of alkaloid, or glucosid, or resin guarantees to him that this preparation will, under similar conditions, produce the same therapeutic effect that any other sample similarly adjusted will produce. We emphasize the fact, therefore, that *any assay process* or *any means of standardization* that *tends to establish a uniform ratio between results obtained and therapeutic activity* becomes at once of unquestionable value, and continues to be of value until supplanted by a new or improved process which more closely maintains this ratio.

For example, Reed and Vanderkleed have shown that the percentage of digitoxin in digitalis and its preparations bears a fairly constant relationship to the activity of the drug, as shown by its minimum lethal dose in guinea-pigs. Although digitoxin is not the only active constituent of digitalis it follows that the chemical determination of digitoxin must be considered of value in the standardization of this drug until chemists have perfected methods for the assay of both digitoxin and digitalin. On the other hand, the determination of the total alkaloids in ergot, although of value in rejecting an inferior quality of drug, cannot be used *alone* as a means of standardizing preparations of this drug, since the proportion of active and inactive alkaloids varies and they do not necessarily bear any very constant ratio to other active principles which may be present.

But few drugs contain one single active constituent that represents its

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entire medicinal value. Therefore, it will always be impossible in practice to make the results of chemical assay *absolutely* indicative of therapeutic value. But in many cases nature has been kind enough to regulate the proportions of the two or more active constituents in the crude drug within such narrow limits of variation as to enable us to secure invaluable information by determining total alkaloids or some one readily isolated single constituent. Thus in the assay of nux vomica for total alkaloids—strychnine and brucine—the results obtained are of value because of the fact that the important strychnine and relatively inert brucine are present always in nearly equal amounts. On the other hand, gelsemium contains two (possibly three) alkaloids which vary not only in activity, but in their relative proportions in different lots of the drug. The chemical assay of gelsemium for total alkaloids therefore is of but little use for purposes of standardization unless checked and verified by biologic tests.

A discussion of chemical standardization such as this would be incomplete unless there be pointed out the utmost necessity for assaying and adjusting to standard strength preparations such as tinctures, extracts, and fluidextracts, even when prepared from assayed drugs. The variations incident to the manufacturing processes are such that, even with the most modern facilities and with the exercise of the greatest skill, no absolute dependence upon uniformity of result is justifiable without subjecting the finished preparation to final assay and adjustment.

Another exceedingly important consideration for the therapeutist is that of the possibility of deterioration. Of what use is standardization to the physician if the carefully adjusted preparation shall have lost part or all of its activity before it is placed in his hands for use?

Fortunately, only a few drugs and their preparations are subject to rapid deterioration. While no preparation should be looked upon as permanent, and freshness is always desired, the preparations of most of the alkaloidal drugs are quite stable, and fluidextracts of such drugs as belladonna, nux vomica, cinchona, ipecac, and opium will remain potent and reliable for years, if kept tightly stoppered in a cool place. On the other hand, digitalis, strophanthus, and ergot preparations, particularly the latter, deteriorate quite rapidly under the ordinary conditions under which galenical preparations are kept. It is important to insist upon the use of preparations of these drugs which have not been repeatedly exposed to the air by the opening and closing of the stock container. Small, well-filled sealed packages keep much better than bulk stock, and the future will undoubtedly find preparations, particularly of ergot, dispensed only in vacuum ampoules.

The Standardization of Biologic Materia Medica.

The state of our knowledge with regard to the pathogenesis of disease; the exact relation of the infecting bacteria to the tissues in which they are growing; the identity of the substances by means of which they exert their effect, and the part played in the course of the disease by products of the tissue them-

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selves, and, furthermore, by the products of the interaction of the cellular and bacterial substances, all serve to complicate the problem of specific therapeutics.

Diphtheria and Tetanus Antitoxins.—The pathogenic effect of diphtheria and tetanus bacilli is exercised by means of soluble poisons, the bacteria themselves causing insignificant local disturbance. The toxins produced by these bacteria may be prepared artificially by well-known methods. These artificially prepared toxins are used for the treatment of animals, usually horses, to produce prophylactic and therapeutic serums. The action of these serums is directly against the toxins, the poisonous properties of which are neutralized. The reaction is probably a simple one of a chemical nature, although concerning this latter point there has been some discussion. The relative toxicity of the diphtheria and tetanus poisons, respectively, is determined by animal injection. Definite quantities are injected subcutaneously into guinea-pigs and the characteristic effect observed. The smallest amount which will kill a guinea-pig on exactly the fourth day is called the minimal lethal dose. Knowing, then, the minimal lethal dose of one of the toxins, it is a simple matter to titrate antitoxin against toxin. The guinea-pig is used as the indicator. If the animal lives, the toxin has been neutralized; if it dies, toxin is in excess.

Such a simple method was first used by Behring. On account of the relative uncertainty of death when the test animals received only one minimal lethal dose, it was found advisable to use a multiple of the minimal lethal dose and 10 minimal lethal doses were decided upon. To this amount antitoxic serum was added in graduated quantities, and the quantity which would prevent the occurrence of all local and general symptoms of intoxication was called a tenth of a unit. Swelling at the point of inoculation could not always be eliminated, even when the toxin was entirely neutralized, and it was decided to consider the *death* of the animal the deciding point. The test was positive if the animal lived beyond the seventh day. Ehrlich showed, however, that this method was open to serious objection, because the toxic diphtheria broth contained not a simple poison, but a very complex one.

Test for Sterility and Safety.—The tests for harmlessness and sterility are of more importance than any other factor in the preparation of the bacterial vaccines. Substances intended for injection beneath the skin must be prepared with infinitely more care than those intended for oral administration. Extremely dangerous substances taken by mouth may generally be recovered, or their effects neutralized by well-known means, but when a harmful or infected substance has been injected beneath the skin it is impossible to recover it. Relatively few of the pathogenic bacteria are able to resist the germicidal action of the gastric juice, but the subcutaneous tissues are susceptible to practically all of them. Our tests, then, must assure us that the vaccine contains no substance poisonous or harmful in itself, and they must demonstrate the absence of all living bacteria and spores.

Subcultures from the various products are therefore of paramount importance. The medium on which these are made must so dilute the preservative that its direct antiseptic action can have no influence upon the development of

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any living bacteria or spores that might be present. For this reason subcultures on agar or other solid media cannot be used; they must be made into a suitable *fluid* medium. Furthermore, the subcultures must be made under conditions which will favor the development of anaërobic bacteria and spores, as well as aërobes, because the most dangerous organism that may gain access to the vaccine is an anaërobe and a spore-producer. This organism is the tetanus bacillus, and it is so ubiquitous that it must never be considered absent without proof. Then a culture medium in a tube or vessel which will favor the development of the tetanus bacillus should be suitable for subcultures from bacterial vaccines. Bouillon in ordinary fermentation tubes seems to answer all requirements. The tetanus bacillus will develop readily in a fermentation tube containing preferably 1 per cent. dextrose bouillon, provided it has been freshly sterilized. Under these conditions the closed arm is sufficiently protected from air to favor the growth of anaërobes.

As to whether or not tetanus spores might develop any doubt is removed if a small piece of guinea-pig liver or heart-tissue, as recommended by Theobald Smith, is crowded into the bend of the fermentation tube. The fermentation-tube subcultures must be incubated at least forty-eight hours before an opinion may be given as to whether or not the vaccine is sterile. The naked-eye appearance of the tube is not sufficient, because the growth of tetanus bacilli and any flocculent material at the bend of the tube must be studied under the microscope.

It has been found that, if horses be bled while in the early stages of tetanus before the development of symptoms, the serum of such horses may contain sufficient toxin to make the ordinary dose fatal. To detect tetanus toxin or any other harmful substance in the serum it is sufficient to inject 5 c.c. of the serum or other product beneath the skin of a guinea-pig. The animal should be held under observation for about ten days.

While tests may show that the product itself is entirely sterile and free from any contaminating substances, extraneous bacteria may gain entrance to the product while it is being bottled or placed in containers in which it is distributed for use. Check sterility tests should therefore be made at every point during the filling, and the contents of one or more finished containers, selected at random, should be injected beneath the skin of a guinea-pig.

It is felt that these tests are really of more importance than tests for strength, since an uncontaminated substance, even though it is low in potency, may do no harm, while a contaminated antitoxin, while very high in efficiency, may result in more harm than good. Even slight accidents of this kind are pounced upon and magnified by those persons of peculiar mental equipment who believe it is their duty to object to everything not the result of their own vain imaginings.

Pharmacognostic or Botanic Standardization.

In a lecture delivered before the Section of Pharmaceutical Sciences of the French Association for the Advancement of Science, at Dijon, August,

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1911, Prof. A. Tschirch, Director of the Pharmaceutical Institute of the University of Berne, called especial attention to the importance of modern pharmacognosy in the study and standardization of materia medica. Schleiden, the great botanist, called pharmacognosy "the mother of all the natural sciences," and, while Tschirch admitted this to be "a rather exaggerated phrase," yet he demonstrated by his historical references the great influence of pharmacognostic study in the development of the natural sciences.

"There is no doubt," said this great authority, "that man, before studying pure chemistry and botany, first studied the chemistry and botany of medicinal and toxic plants, that is to say, the products of nature which were most immediately useful to him. Theophrastus and Dioscorides, whom I should like to call the first pharmacologists, were at first interested in such plants. During the entire Middle Ages, such scientists as Hildegard and Albertus Magnus, as well as the Arab writers, studied and described only these same plants, and when the beginning of the contemporary epoch saw the renaissance of all the sciences, the 'Patres Botanices' book, Brunfels, and Fuchs devoted themselves to the study of medicinal plants."

In the nineteenth century pharmacognosy was put aside by the rapid development of the purely theoretical natural sciences and became nothing more than a superficial knowledge of merchandise. But Flükiger and Hanbury opened a broader field for it. To be sure, they regarded it as little more than a monographic study of their drugs, but their work gave it a fresh impetus. This development has occurred during the past ten years. Then Pomet, Geoffroy, Guibourt, Schleiden, Ondemans, Berg, and Tschirch, on the other side of the water, and Kraemer, Schlotterbeck, and Rusby, on this side, gave it new development. Leaving the purely practical, to remain, however, of great importance as applied pharmacognosy, it directed itself to purely scientific problems and has become, during the past decade, an independent science.

Tschirch calls attention to the great divisions and subdivisions into which this great subject may be divided. The botanical questions must be separated from the chemical and physical questions; the geographical and historical questions, from the linguistic and ethnological questions. Thus, we have the separate branches, pharmacobotany, pharmacochemistry, pharmacogeography, pharmacoethnography, and the history of pharmacognosy, the study of which should be directed from general pharmacognostic viewpoints, and not from the viewpoints of botany, chemistry, geography, ethnography, etc.

Turning to pharmacoanatomy, we find its practical bearing upon the subject before us, viz., the modern methods of drug standardization. By the study of this branch we have learned how to ascertain the identity and purity of drugs by examining powdered drugs macroscopically and microscopically. Attention to pharmacophysiology is teaching us how to so cultivate medicinal plants as not only to maintain their active principles at a regular standard, but to increase them. And it is hoped that the time may come when we may succeed in developing in the plants only the valuable active constituents, and in causing the less important principles to diminish. This opens up the field

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for pharmacoagriculture, including the study of the effects of soil, climatic conditions, fertilizers, and grafting.

That the value of medicinal plants can be increased by intelligent cultivation has been abundantly demonstrated by the culture of cinchona in Java, where the Dutch have succeeded in producing barks yielding 16 per cent. of quinine. The Committee on Revision adopted as its standard for the eighth edition of the United States Pharmacopeia 5 per cent. of total cinchona alkaloids, which will be increased in the next revision to 6 per cent. By cultivation, beets are made to yield 15 to 16 per cent. of sugar. By means of experiments and observations carried on for several years in the forests of Berne by Tschirch, he was enabled to formulate a law which he called the law of resinoids. When this law was tested in the forests of North America an increase in receipts of $100,000 resulted for the rosin manufacturers in one small district.

The results obtained with drugs producing alkaloids, saccharine substances, and resins can certainly be achieved with plants containing glucosids, odorous substances, and fatty or mucilaginous materials.

The limits of this paper will not permit extended reference to the action of ferments upon drugs and the wonderful results obtained by killing the ferments by elevated temperatures during the process of drying them. But we cannot leave the subject without calling attention to the warning to the medical profession contained in the following words of Tschirch: "We know that rarely does a single substance suffice to produce the effect of the drug; it is the combined action of all the substances which brings about the peculiar effect. Nevertheless we must often recognize the preponderating influence of one substance, which I have characterized as dominant. It is at first by clinical experience that one gets to appreciate this fact, since it has thus been determined that the effect of employing the entire drug is rarely the same as the effect of the single so-called active principle. Moreover, Professor Bürgi, of Berne, has shown positively that very often the effect of one substance can be augmented or diminished by another, and that similar substances are not additive in their effects. The 'adjuvantia' of the old pharmacologists were therefore not chimeras, but, on the contrary, a distinct idea corresponding to the name and to the thing itself.

"This ancient idea, under a new form, brings us to the study of the drug itself. Under the influence of the successes of the modern synthesis of medicaments, and the misunderstood theory of the so-called active principle, we have been gradually abandoning drugs, in spite of experiments carried on for hundreds of years, and even, in the case of certain drugs, for thousands of years. Many physicians have already disaccustomed themselves to the use of drugs. But they cannot be replaced, and the wish that I expressed in London, in 1909, 'let us go back to drugs' found an echo much sooner than I expected, and in more extended circles than I had dared hope.

"How can one replace rhubarb by a solution of emodin, ipecac by emetine, opium by morphine, digitalis by digitoxin, ergot by ergotoxine or by the interesting bases isolated by Barger and Dale, which, according to the recent

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experiments of Kehrer, do not even act on the uterus? Emodin, emetine, quinine, digitoxin, and morphine are pharmacological individuals, different from the drugs themselves, and should be numbered among remedies not to replace the drugs, but to stand beside them.

"Since we know that there is in the drug a dominant principle, but that the effect is not produced by this principle alone, we are more than ever obliged to make a profound chemical analysis of the drug in all its elements. The object of pharmacochemical research is not the discovery of a single active principle, but the complete analysis of the entire drug."

Pharmacodynamic or Physiologic Standardization.

Physiologic or, more properly, biologic assays are of value in two ways,—first, when they must serve alone in the absence of any available chemical method, and, secondly, to supplement and to check the accuracy of conclusions based upon chemical standardization.

The purpose of the biologic assay, just as of the chemical assay, is to secure a means of measuring therapeutic activity and to make it possible to furnish *uniform* preparations. A satisfactory method which meets these requirements may or may not involve the production of physiologic reactions similar to those which the drug is intended to be the means of producing when used therapeutically. That the effect chosen as a means of standardization does not parallel the clinical effect sought is not sufficient to condemn the method. It is only necessary that the effect chosen as an earmark be always indicative of a good quality of the drug or preparation, and criticisms of methods on the ground that they are *toxic* methods or that the animal chosen is biologically much different from man are made only through a lack of conception of the real purpose of the physiologic test, namely, to secure *uniformity*. The determination of the real value of a drug in the treatment of disease in man is another matter entirely.

While many articles have been presented to science during the past few years, dealing with one or more of the biologic methods in use at this time, apparently no attempt has been made to bring them all together in such a manner as to make it possible for one to follow them without referring to many diverse publications. We have accordingly outlined the principal biologic methods of assay in use in standardizing the modern materia medica, and given specific directions for carrying out this work.

Blood-pressure Method for the Standardization of Epinephrin and Products of the Suprarenal Gland.

Apparatus Necessary for Experiment.—A large kymograph with manometer arranged for taking blood-pressure tracings on continuous rolls of smoked paper; accurately graduated all-glass syringe; large and small scalpels; small, sharp-pointed scissors; grooved director; hemostat; two glass seekers; several bulldog clamps; small glass cannulas; silk ligatures; a dog board.

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Animals.—Various animals may be employed, the dog, cat, or rabbit; but dogs of medium weight (8 to 14 kilos) give the best results.

Preparation for Experiment.—First completely anesthetize the animal. Any of the volatile anesthetics, such as ether or chloroform, may be employed, but, since it is of great importance that the blood-pressure should not fluctuate

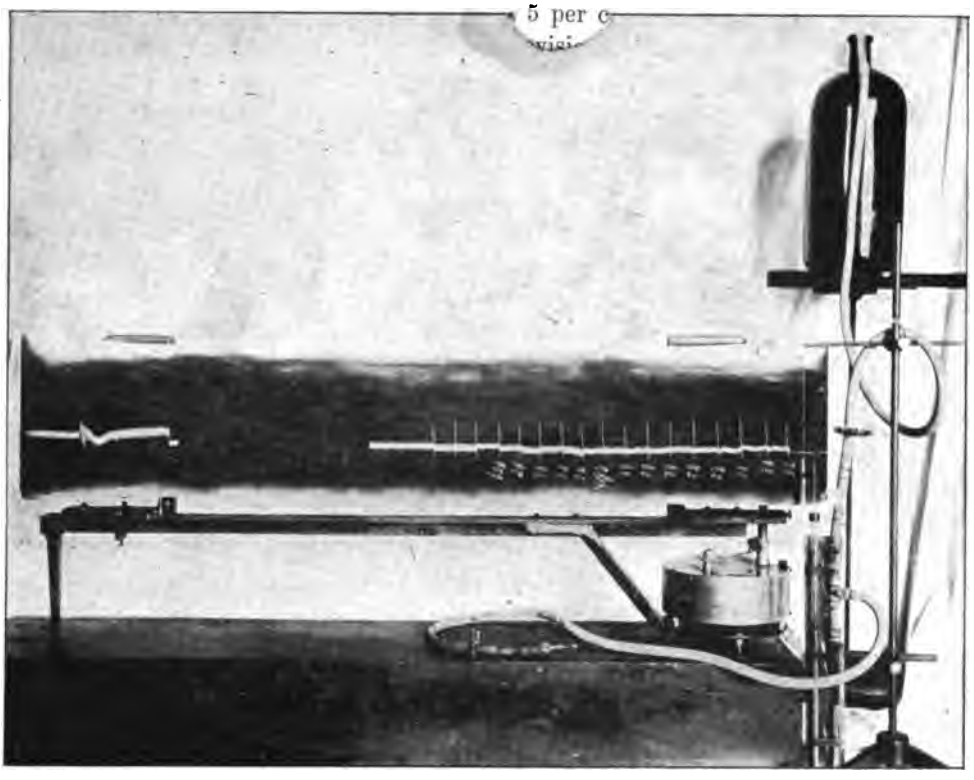

Fig. 1.—Arrangement of apparatus for taking blood-pressure tracing.

from the action of the anesthetic, it is better to employ one of the following methods for this purpose:—

1. Inject subcutaneously 0.01 Gm. of morphine sulphate for each kilo of body weight, and supplement by the use of such a quantity of ether as may be necessary to prevent the pain of the operation. After connecting the artery with the manometer the animal is allowed to come from under the influence of the ether. No experiments should be begun until at least ten minutes have intervened after the withdrawal of the ether.

2. Inject subcutaneously 0.01 Gm. of morphine sulphate per kilo body weight of animals, and 45 to 60 minutes later give by mouth 1.5 to 2 Gm. of acetone chloroform (1.5 Gm. for animals weighing 6 to 7 kilos, 2 Gm. for those weighing 10 to 12 kilos, and intermediate weights accordingly). The acetone chloroform is prepared for administration by shaking it with 4 c.c. of alcohol until dissolved and then adding 4 c.c. of water and again shaking.

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The latter method is especially valuable for this work, as it is easily carried out, and under its influence the blood-pressure and heart action remain practically constant for hours. I find, however, in many cases, that the animal does not react in such a way as to give concordant results immediately after the administration of this anesthetic, and therefore advise the following procedure:—

3. Administer the anesthetic as set forth above; wait until all voluntary movements have ceased; clip hair from the throat; make an incision about 2½ in. long; sever the tissues surrounding the carotid artery in such a manner as to free about 3 in. of it, taking care not to injure the vagus, which is found in the same sheath. Next make an incision about 2 in. long over the saphenous vein at its junction with the femoral vein and sever the tissues just enough to free about 1 in. of each; tie a short cannula of small bore in the saphenous, close to its junction with the femoral; cover both incisions with a piece of

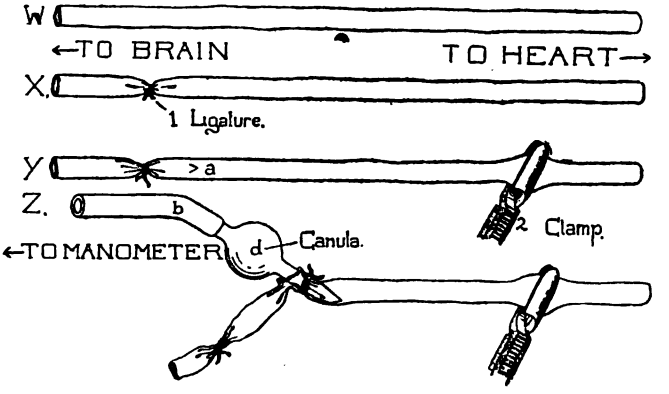

Fig. 2.—Method of connecting the artery with the manometer.

gauze saturated with normal saline solution. *The animal is then left in this condition for 1½ to 2 hours so that the effects of the anesthetic may partially pass off;* remove the gauze from the neck; lift the exposed part of the carotid artery by means of a glass seeker; tie off that part of the artery leading to the brain (Fig. 2, 1) and close that part leading to the heart with a "bulldog" clamp (2), leaving at least 2 in. between the ligature and the clamp; snip a small V-shaped hole in the artery (*a*), about ¼ inch from the ligature, with sharp-pointed scissors; make sure that the connecting tube (*b*) and cannula (*d*) are free from air; insert cannula in hole (*a*) and tie the artery fast by means of another ligature (Fig. 2, *Z*). Open *C* (Fig. 3) and *E* in order to fill the portion of the artery between the cannula and the bulldog clamp with the magnesium sulphate solution. This keeps the blood from entering the cannula and thus prevents clotting; close *E;* close *C;* remove clamp from artery; slowly open *C* until the floater *F* makes an excursion of about ⅜ to ⅜ in. It should then be made to write on a drum which will revolve slowly,—about 1½ to 2 in. per minute.

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Preparation of Solutions.—The standard solution is prepared by dissolving 1 part of pure epinephrin hydrochloride in 100,000 parts of normal saline solution.

The preparation to be standardized should be carefully diluted with normal saline solution to the same strength, as nearly as may be estimated,

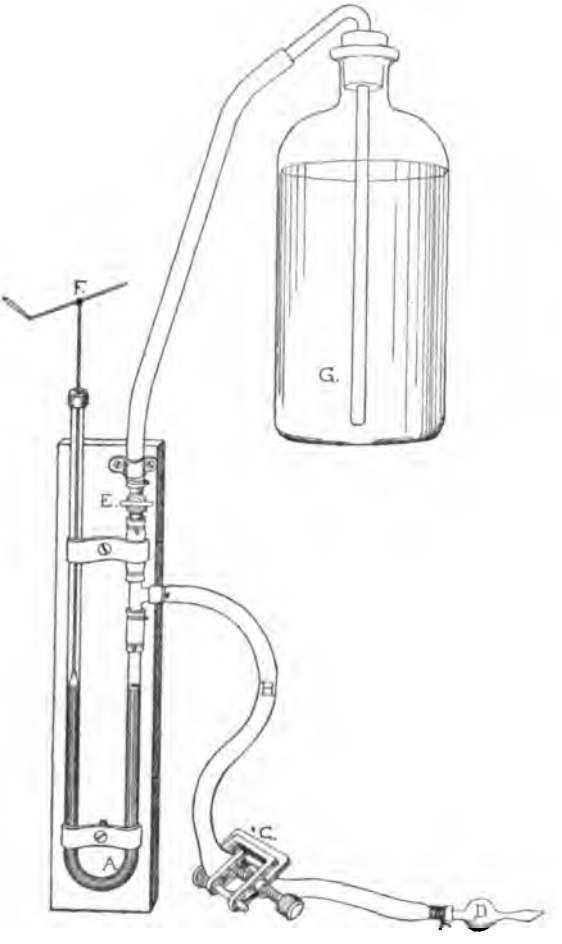

Fig. 3.—Mercurial manometer. (*A*) U-tube partially filled with mercury. (*B*) Connecting tube. (*C*) Screw-clamp. (*D*) Cannula. (*E*) Stopcock. (*F*) Floater with writing point. (*G*) Pressure-bottle containing half-saturated magnesium sulphate, or sodium carbonate, solution.

as that of the standard used, or be of such strength as may be readily diluted in case the primary injection is found to produce too marked a rise in the blood-pressure.

Method of Injecting.—The injections may be made either in the jugular or the femoral vein. The latter is preferable because it is located farther from the heart, thus giving the preparation injected an opportunity to diffuse more thoroughly with the blood before reaching the heart.

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The saphenous vein is lifted and held with a pair of tweezers while the needle of the all-glass syringe is inserted far enough through the cannula in the saphenous vein to allow the point to project into the femoral vein (Fig. 4). After injecting the preparation withdraw the needle and quickly clamp saphenous vein with a bulldog clamp.

The advantage of this method is that, although clamping off the saphenous vein after withdrawing the needle causes clotting, the preparation injected is carried to the heart by means of the main current of blood in the femoral vein.

Actual Standardization.—(*a*) *Determination of the Proper Dose of the Standard Solution.*—The blood-pressure tracing is started on a slowly revolving drum. After obtaining a tracing of normal pressure about 3 in. in length, the drum is stopped. Inject the standard solution in a dose of 0.15 c.c. per kilo. The rise of the blood-pressure should be about 40 to 60 mm. of mercury (equivalent to 20 to 30 mm. rise of the writing point of the floater in a U-shaped manometer), and it should be submaximal. To determine the latter,

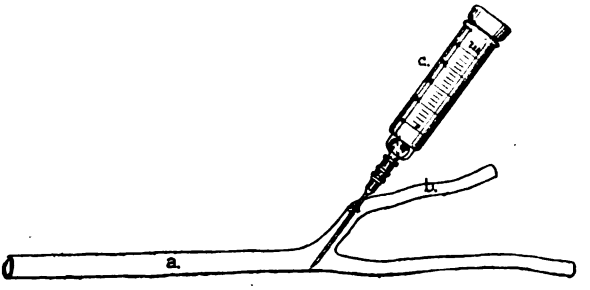

Fig. 4.—Method of injecting. (*a*) Femoral vein. (*b*) Saphenous vein. (*c*) All-glass syringe.

a second injection of 0.175 c.c. per kilo should be made after allowing the drum to revolve about 1 in., which should show a higher rise. If the dose of 0.15 c.c. per kilo does not give a submaximal rise of at least 40 mm., or if it gives a maximal rise, the dose should be increased or reduced, respectively, until the standard effect is obtained, and this dose should be considered the "standard dose." The injections should be made at about the same rate, and an interval of at least 3 minutes should elapse after the blood-pressure has returned to normal before another injection is made.

The "standard dose" should be large enough to cause *almost* the maximum rise, because the larger the amounts of active principle compared the more accurate the results. It is well known that the stronger the stimulus the more nearly in accord are the results obtained.

(*b*) *Comparison of the Unknown with the Standard Solution.*—A "standard dose" of the unknown solution is injected and the rise of pressure compared with that produced by the "standard dose" of the standard solution. If the difference is very great the unknown solution is strengthened or diluted. The amount of the injections is then increased or decreased until that dose of the unknown solution is found which will cause the same rise of

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pressure as that caused by the "standard dose" of the standard solution. Occasional injections of the standard solution should be made to insure constancy in the reaction of the animal. Final equality is tested by injecting alternately the standard and unknown solutions until the average rise of several consecutive injections is practically equal.

Complete and Abbreviated Tracings.—Two kinds of tracings may be obtained,—(1) complete ones, when the drum is kept in constant motion, and

Fig. 5.—Complete tracing.

(2) abbreviated ones, when the drum remains at rest until the reaction is complete. Abbreviated tracings which give only the maximum blood-pressure obtained from each injection are usually sufficient.

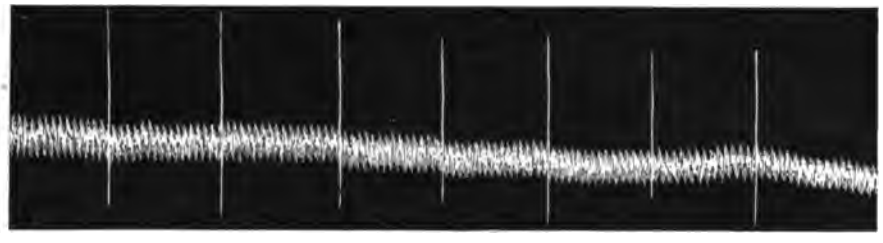

Fig. 6.—Abbreviated tracing.

In measuring the tracings it must be remembered that the real rise in blood-pressure is twice that which is recorded, since there are two sides to the U-tube and the needle only moves through a space that represents the difference of level between the mercury in the two sides.

It is understood that no calculations are to be made from relative size of rises caused by similar doses, but always from similar rises, the relation being determined by the size of the dose. More accurate results are obtained if the systolic pressure is alone considered than if the average pressure half-way between systole and diastole is taken for the measurement.

(*To be concluded in the February issue.*)

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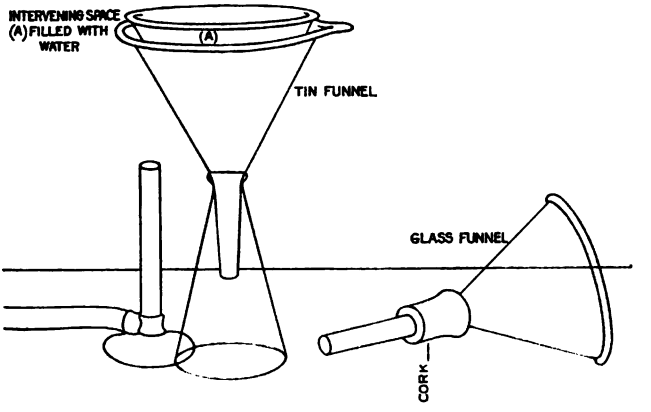
A SIMPLE AND RAPID WAY OF FILTERING AGAR-AGAR.*

By MICHAEL G. WOHL, M.D.,

PHILADELPHIA, PA.

It is well known to workers in bacteriology that the filtration of agar-agar requires considerable patience and much waste of filter paper.

Of the many devices that have been invented, none has been found satisfactory. The best method would naturally be one characterized by simplicity of procedure and requiring but little time. With the object of finding such a method in view, I have tried to filter agar-agar in Arnold's sterilizer and in the autoclave, but neither gave satisfactory results.



The method given below served the purpose best. By it one can filter 1000 c.c. of agar-agar in about five minutes.

Method.

Articles required: (*a*) large tin funnel; (*b*) glass funnel of the same size; (*c*) cork to fit into the neck of the tin funnel; (*d*) Bunsen burner; (*e*) cork borer and water.

Bore a hole in the cork sufficiently large to admit passage of the elongated end of the glass funnel. Insert the cork, through which the spout of the glass funnel extends, into the neck of the tin funnel. It should fit snugly so that no water can leak through.

Fill up the space between the tin and glass funnels with water (see illustration). Bring the water to the boiling point, preferably by two Bunsen burners, one placed at a higher level than the other, so that the water is kept uniformly hot. Place inside the glass funnel a plaited filter paper, and pour the agar-agar over the latter.

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* From the Laboratories of Pathology and Bacteriology, Temple University, Philadelphia.

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By allowing the agar-agar to pass through a piece of gauze before it is poured into the funnel, the coarse particles of the coagulated albumin are caught within its meshes, and this facilitates the filtration. The agar-agar is thus surrounded by boiling water, its liquid state consequently preserved, and rapid filtration made possible.

PHYSICAL ECONOMICS—WITH REFERENCE TO THE ECONOMIC VALUE OF MAN AND THE MEASUREMENT OF DAMAGES TO ANY PART OR PARTS OF HIS BODY, BY STANDARDS OF MEASUREMENTS AND MATHEMATICAL FORMULAS, IN A MANNER EQUITABLE TO ALL CONCERNED.*

By ERASTUS EUGENE HOLT, A.M., M.D., LL.D.,

PORTLAND, MAINE.

Any physician who devotes more or less of his time to the treatment of diseases of the ear may be called upon to give expert testimony as to the damages to the ears, from injury or disease, either alone or in connection with damages to other parts of the body. For this reason there should be some standard method by which all those who are called upon to render this service may arrive at definite conclusions which will agree with all the existing conditions of the person who has suffered such damages.

The aim of this paper is to present a standard method of procedure which may be employed by any physician who may be called upon to render such a service. By such a method definite conclusions may be reached, and, although the conclusion reached by one physician may differ from that of another in a given case, nevertheless these conclusions will have been reached by the same method, and this difference may be readily accounted for by examining the several factors employed and noting the different values given to these factors. Thus every step of the process of each independent observer may be taken up separately, compared with one another, and discussed. Each may state his reasons for determining the value given to each factor in the problem. If an agreement cannot be arrived at in regard to the value given to each factor, a note may be made of this disagreement and this difference in the values of the factors will indicate precisely why the results differ from one another. Thus, all physicians who are called upon to determine damages to any part, or parts, of the body, from injury or disease, will be employing one uniform method corresponding precisely to that by which the value of any physical force is obtained. This method is known as the natural science method. This method was used by the scientists when they devised a way to measure electricity and defined the unit of electromotive force to be a volt, named in honor of Volta, an Italian physicist, which consists of one ampère, named in honor of Ampère, a French physicist, with a resistance of one ohm, named in honor of

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*Read before the American Otological Society, at Atlantic City, N. J., June 11, 1912.

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Ohm, a German physicist. These three elements when used as factors and multiplied together are equal to a watt, named in honor of Watt, the great English inventor. America, the home of some of the greatest inventors, is not represented. If we use the first letter of each of these words as a symbol to represent them as factors in a formula, we have as follows: $V \times A \times O = W$, 746 of which watts equal a horse power. A horse power was designated by Watt, when he invented the steam engine, to be equal to a force which will lift 3300 pounds one foot in a minute.

With reference to the economic value of man, we find that in the seventeenth century Sir William Petty was the first to attempt to determine the economic value of man from his earning ability. In the latter half of the same century, Adam Smith, of Scotland, in that classical work entitled "Nature and Causes of the Wealth of Nations," compasses the whole subject in four sentences, as follows:—

"When any expensive machine is erected, the extraordinary work to be performed by it before it is worn out, it must be expected, will replace the capital laid out upon it, with at least the ordinary profits. A man educated at the expense of much labor and time to any of those employments which requires extraordinary dexterity and skill may be compared to one of those machines. The work which he learns to perform, it must be expected, over and above the usual wages of common labor, will replace to him the whole expense of his education, with at least the ordinary profits of an equally valuable capital. It must do this, too, in a reasonable time, regard being had to the very uncertain duration of human life, in the same manner as to the more certain duration of the machine."

Since that time scores of writers have devoted more or less time to the subject. It remained, however, for William Farr, in the nineteenth century, who spent his life in the Registrar-general's office of England, writing on vital statistics and allied subjects, to become an authority on these subjects throughout the whole civilized world. Dr. Farr comprehends this subject in one sentence as follows:—

"The value of any class of lives is determined by valuing first, at birth, or any age, the cost of future maintenance and the value of future earnings."

Ernst Engel, of Germany, in a work published in Berlin in 1883 upon this subject, for the extracts from which I am indebted to Professor Wilcox, of Cornell University, computed the cost of the production of human beings from household account books. He was not inclined to accept Farr's method, not however giving any reason therefor. Engel, after an elaborate consideration of the subject, developed tables of the value of human beings from the point of view of the cost of production. He, however, omitted to reckon one of the chief factors in the production of a human being, namely, the value of the services of the mother. When these services of the mother are added to the cost of production which he obtained without them, they make the expense of producing a human being similar to that obtained by Farr. For economic purposes we must determine the economic value of man from his earning ability,

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no matter how much he may have cost to produce. The same law of average is a determining factor in this, as in the problem of establishing a life table.

To those who may protest against the determination of the money value of man, Engel quotes from the classical work on anthropometry of Quetelet, of France, published in 1885, as follows:—

"My investigations and standpoint are so positive that many may shrink from them, some finding them materialistic, others finding in them a desire to extend unduly the limits of the exact sciences and apply mathematics in a region where it does not belong."

Appealing to the advances made in astronomy in refutation of such ideas and sentiment, Quetelet further says:—

"Who will accuse the learned because they have given us in place of the narrow world of the ancients a knowledge of our glorious solar system and have pushed the limits of our starry firmament so far that the mind cannot think of these distances without a religious awe? Surely a knowledge of the wonderful laws that govern the world and have been discovered by learned men makes the power of the divine seem far greater than it did under that conception of the world which a blind superstition would have compelled us to retain."

No. 9, The Evom Table.[1] This word is derived from the first letter of each of the words in the phrase, "economic value of man." It is based upon the method promulgated by Farr, the unit adopted being one dollar a day or three hundred dollars a year. By adopting this unit, computations may be readily made for a person earning any fractional part of one dollar a day, or three hundred dollars a year, or any number of times one dollar a day, or three hundred dollars a year. The rate of discount upon which the computations are made is 3½ per cent. compound interest per annum.

The earning ability of a person is a composite quantity made up of certain indispensable elements which may be used as factors in a mathematical formula. These are first what nature gives to a man, namely, the structures and functions of the different systems and organs. No one can question the necessity of having these in a fairly healthy state for the normal earning ability of a person. These structures and functions of the different systems and organs of the body may be designated the functional ability of the body, and may be represented by F as a symbol to be used as a factor in the formula.

The structures and functions of the different systems and organs of the body would have no earning ability if they were not trained to perform certain work successfully. This second indispensable element of the earning ability, the training of the mind and body, is given to man by man. It may be termed the technical ability, and be represented by T as a symbol to be used as a factor in the formula.

We now come to the third and last indispensable element of the earning ability, namely, the ability a person has from the training of his mind and body to use them successfully in some vocation and receive a remuneration for

[1] Tables are to appear at the end of the article in the February issue.

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such services. This third indispensable element of the earning ability may be designated the competing ability, and may be represented by C, as a symbol to be used as a factor in the formula.

For the earning ability, E may be used as a symbol to represent this composite quantity in the formula, and we have:—

(1) $F \times T \times C = E$, the mathematical formula for the normal earning ability of a person, and for determining damages to the body from injury or disease.

In order to have a practical method for determining damages to the ears, from injury or disease, we must have one that can be used for determining damages to the structure and functions of any other system or organ of the body that may have occurred at the same time. A method that could be used only for one set of organs, *e.g.*, the ears or eyes, and could not be used to ascertain damages to other parts of the body which may have occurred at the same time, would be of little or no value, because one of the parts of such a method would be purely empirical, and, like the chain which is no stronger than its weakest link, it would be no better than its weakest part. It has been necessary, therefore, for this purpose to devise the above-mentioned mathematical formula for the normal earning ability of the entire body, in order that by it we might be able to determine damages to the structures and functions of all the different systems and organs of the entire body, which may occur either singly or together, at any one time, by one uniform method, which corresponds to that by which the value of any physical force is obtained. It will be seen that it is necessary to treat this subject on the broad general principle of determining damages to any part, or parts, of the body which may have occurred either singly or together at any one time.

I shall endeavor to make it as clear as possible in the time and space at my disposal.

We found by analysis that E, the earning ability of a person, is a composite quantity, and by the same method we find that its principal factor F, the functional ability of a person, is also a composite quantity, made up of the different systems and organs of the body. By this analysis, systems and organs have been selected and grouped together into four units, in accordance with their development and associated functions, and each of these four units has also been divided into three parts, which include all the indispensable elements of the unit. We thus have four units, each one of which has three parts, making in all twelve parts, which include the structures and functions of all the indispensable elements of the body which may be damaged from injury or disease.

The four units and each of their subdivisions are represented by the first letters of the alphabet as symbols to be used as factors in the formula for determining their remaining functions when damaged from injury or disease. Letters of the alphabet have been used only once as symbols, and those which might lead to confusion in the formulas have not been taken for symbols.

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F = {
- a = { Osseous, articular, and muscular systems, consisting of.. { h, the bones; i, the joints; k, the muscles.
- b = { Circulatory and respiratory systems, consisting of..... { m, the vascular system; n, the blood; p, the lungs and their accessory organs.
- d = { Digestive and genitourinary systems, consisting of..... { q, the alimentary canal and its accessory organs; r, the skin; s, the kidneys with the genital organs.
- g = { Cerebrospinal system, nerves and organs of special sense, consisting of ..... { u, the brain, its membranes, and its nerves; v, the spinal cord, its membranes, and its nerves; w, nerves and organs of special sense.

We are thus able to determine the structural and functional condition of each system or organ, separately or together, in accordance with the actual conditions of the disability in them.

The factors of a unit multiplied together are equal to the unit, thus: (2) $h \times i \times k = a$. The units as factors multiplied together are equal to the functional ability of the body, thus: (3) $a \times b \times d \times g = F$. The functional ability of the body multiplied by the other two factors, T and C, of the earning ability is equal to E, the earning ability of the person, thus: (4) $F \times T \times C = E$. Thus the values of the twelve different parts, representing all the structures and functions of the body, are determined as readily as the value of one organ, for instance that of the eye, by one uniform method similar to that which is employed in the natural sciences to ascertain the value of any physical force.

The next and last requirement for the solution of this problem is a standard of measurement for each of the different systems and organs included in the twelve different factors of the four units representing all the structures and functions of the body.

The various means at our disposal for determining the scientific standard of measurement for normal hearing I shall not consider, for they are the common property of all, and it would take me beyond the scope of my subject to do so. We must, however, always keep in view the law of average in determining it, the same as has been done in determining the scientific standard of measurement for normal sight. Whatever scientific standard of measurement for normal hearing may be adopted, it can be divided into tenths for convenience of record. The full scientific standard of measurement for normal hearing is no more needed for most vocations than the full scientific standard of measurement for sight is needed for most vocations.

The range of sight for the economic standard of measurement established

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by Magnus, of Germany, for persons in vocations requiring higher acuity of sight is from 0.15 to 0.75, or a range of 6 of the 10 tenths into which the scientific standard of measurement is divided. For persons in vocations requiring lower acuity of sight the range is from 0.05 to 0.5 of the scientific standard of measurement.

After weighing, measuring, comparing, and testing all the requirements of the hearing for the average vocations, the conclusion was reached that a range from 0.7 to 0.1 of the scientific standard of measurement is sufficient for the economic standard of measurement. Table 7 has been constructed upon that basis. By this standard of measurement a person may lose 0.3, according to the scientific standard of measurement, and still have hearing sufficient for economic purposes. Again, if he loses 0.9, according to the scientific standard of measurement, he has 0.1 left, but this is not sufficient for economic purposes, and that person would then have a total loss of hearing for economic purposes. By this standard we have a range of 0.6 of the scientific for the economic standard, which is sufficient for all practical purposes.

For convenience we have conformed partly to the terms employed in the Bureau of Pensions of the United States to designate the different degrees of the loss of hearing, on account of their long use and consequent familiarity among medical men. These terms are as follows:—

First, slight; second, severe; third, nearly total, and fourth, total, loss of hearing.

(*To be concluded in the February issue.*)

Editorial

THE SCIENTIFIC PRACTICE OF CHIROPODY.

THE medical profession will follow with interest the attempt of New York State to reform the abuses which have crept into the practice of chiropody as carried on under the old law, and which it is sought to alter for the better under the Amendment to the Public Health Act which became effective September 1, 1912. The law now provides that the State Board of Medical Examiners shall determine the fitness of future chiropodists, and that a candidate for license must be graduated from a school of chiropody registered by the Regents as maintaining a proper standard. Academic tests are also to be exacted by the Regents from all intending students in chiropody.

Dr. Maurice J. Lewi, who for twenty-one years has served New York State and the profession so well as Secretary of the State Board of Medical Examiners, has resigned this dignified position to become the President of the School of Chiropody of New York, the first and only school of its kind to be registered by the Regents as maintaining a proper standard. With him steering the new craft it may well be expected that the work will be carried on along scientific lines, with the result that ere long the practice of chiropody

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will become a specialty of medicine. In the mean time, supported by a faculty of competent physicians and skillful chiropodists, there is every reason to suppose that the public will be rendered a great service, inasmuch as properly equipped persons will gradually supplant those lacking in a knowledge of the essentials for caring for the foot-afflicted ones. Dr. Lewi's disassociation from the official medicoeducational position he has so long and so ably filled is a distinct loss to the profession. We wish him an abundance of success in his new undertaking.

Dr. Lewi's successor as Secretary of the New York State Board of Medical Registration will be Dr. Otto von Huffman, assistant professor of pathology in the College of Physicians of Columbia University. We hope for the new secretary the splendid career of his predecessor.

Cyclopedia of Current Literature

ALBUMINURIA IN CHILDHOOD, TREATMENT OF.

Reference is made by the author to the fact that, in a series of 128 cases of scarlet fever in which prophylactic injections of Roux's serum were given by Lesage, albuminuria appeared only in 2 cases, or 1.6 per cent., while in a control series of 120 cases the symptom occurred in 11 cases, or 9.1 per cent. The dose used was 30 c.c. of Roux's serum, sometimes 40 to 60 c.c. when sore throat with false membrane was present. In view of the results noted, the author thinks that the giving of the serum is advisable in all cases with sore throat, even where the diphtheria bacillus is not found. Troublesome effects due to anaphylaxis are extremely rare with this serum, and the transitory albuminuria which has been reported as a result of its use is also very rare. Thus, in cases of albuminuria which may have originated from a throat inflammation, as well as in cases of albuminuria, in general, in which a milk diet and the other therapeutic resources have proven ineffective, Roux's antidiphtheritic serum in doses of 10 c.c. (2½ drams) should be administered hypodermically every three or four days. Galliot (Journal de médecine et de chirurgie pratiques, September, 1912).

ALCOHOL, EFFECTS OF, WHEN INJECTED INTO NERVES.

Nerve-tissue from a case of supra-orbital neuralgia in which an injection of 80% alcohol into the nerve had been given nine months before was studied by the authors. One c.c. of the alcohol had been injected into the nerve in various directions under visual control, and the fragment examined was taken from the point injected. Neighboring uninjected nerve-tissue was also examined for comparison. The conclusion reached was that the only histological changes produced were those indicating a mild degree of interstitial inflammation, not appreciably modifying the structure of the nerve, not altering its fibers, and which might, in fact, have been merely the result of the denudation to which the nerve had been subjected at the time of the injection. Under these conditions the statement is warranted that the introduction of 80

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per cent. alcohol into a nerve trunk causes no lasting vital alteration. While this does not detract from the practical importance of deep alcohol injections in neuralgic conditions, it shows that 80 per cent. alcohol is not certainly a neurolytic agent. L. Bériel and A. Devic (Lyon médical, December 8, 1912).

APPENDICITIS IN CHILDREN, TREATMENT OF ACUTE.

After referring to the fact that, owing to their greater liability to a generalization of the infection, early operation in appendicitis is even more imperative in children than in adults, the author points out that the postoperative treatment is also more important in children. The Fowler position has contributed very greatly toward reducing the mortality in general peritoneal affections.

Continuous instillation of saline *per rectum* is the rule in adults; in children it is a complete failure. They do not retain salines given *per rectum* at all well, and in the Fowler position they retain less than when lying flat. The author has found it more satisfactory to give saline in small quantities, 8 to 10 ounces, *per rectum,* every four hours or, if possible, every two hours; children can retain this amount fairly well, provided it is given slowly with a catheter and funnel. It is easier, when it is given in this intermittent way, to be sure that the saline is injected warm,—a most important matter, as any chill to a child is dangerous.

With adults the rule for diet is starvation, with or without water, or albumin water. In children this practice must not be followed. Raisin tea, a decoction of crushed raisins, may be given with advantage; a feeding of this, alternated with albumin water, will provide them with proteid and a carbohydrate (dextrose), which is absorbed directly.

The bowels should be opened as soon as possible. In children little difficulty is experienced in this respect, in contradistinction to adults. If there is not a normal motion within twenty-four hours after the operation, a glycerin enema should be given, and syrup of senna used as the routine aperient.

In all cases of appendicitis in children a guarded prognosis should be given. If the disease is recognized early, and it is possible to obtain the services of a skilled operator within the first twenty-four hours, there is every chance of a successful issue. In 14 cases operated on within this time, there were no deaths, whereas the mortality in a whole series of 208 cases was 41.8 per cent. H. E. S. Stiven (Practitioner, October, 1912).

ASTHMA, TREATMENT OF UNCOMPLICATED.

Prophylaxis.—Aside from local irritants, such as dust, irritating gases, and impure air, four conditions which act as special exciting causes of asthma in predisposed persons—sudden disturbing emotions, continued anxiety, physical overexertion, and various infections grouped under the head of "colds"—should be avoided or counteracted in so far as is possible. When visited the first time during an attack, the patient should be given 10 grains of blue mass (or an equivalent of calomel with soda). The mercurial itself often has the effect of ameliorating the attack in the course of some hours, but if the patient is suffering intensely the author does not hesitate to give one morphine and atropine subdermal injection as part of the initial treatment. The use, however, of

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either morphine or alcohol during treatment is interdicted, because both retard elimination. Whether or not morphine is given, several watery stools must be obtained the following morning from a sufficient dose of salts.

For constitutional treatment the author depends upon sodium iodate, the dose of which for adults is 4 or 5 grains given at intervals of four to six hours. Some appropriate nourishment, solid or liquid, is given at the same time. One grain of caffeine citrate may be added to each capsule. The mercurial purge may be repeated if the attack is not markedly better in twenty-four hours. Nightly repetition, however, is undesirable and will be without effect. Sodium iodate is considered by the author a specific for the paroxysm of uncomplicated spasmodic asthma. It should not be given, however, to tuberculous patients and especially such as have had hemorrhages, because of the presence of the iodine atom. Although it is an energetic methemoglobin-producing drug, the finding of any hemoglobin in the urine during treatment with it need cause no anxiety, as it is but a transient occurrence.

Diet.—The patient must be certain what part of his diet, if any, is really at fault; a person may eat meat and potatoes, feel distressed, and think the meat disagrees, when, in fact, the potatoes should have been avoided. The heaviest meal should be taken at noon. The evening meal must be light, and should not be taken later than 6 o'clock.

During an attack the patient should take only broths at intervals of two to four hours. In the periods between attacks he should eat a variety of plain, coarse food—enough to satisfy hunger and no more. Soups, clear of fat, may be taken; boiled or broiled fresh fish, raw oysters, raw clams, various meats, tender and lean. All vegetables may be eaten that agree, but heavy vegetables, *i.e.*, onions, cabbage, cucumbers, corn on cob, etc., usually must be avoided. He should eat few potatoes, or, better, none at all. The same may be said of legumes,—peas, beans, etc. Only bread that is well baked should be eaten or the same toasted thoroughly. Rice, cereals, and eggs (except fried) in moderation; of the last not more than one or two at a meal. No raw fruits; these should be taken as sauces or compotes. Hot cakes, pancakes, sweet cakes, pies and other rich crusts, nuts, cheese, and any article of diet that experience has shown to produce distress should be avoided; also candy, jellies, preserves, or much sugar in anything, much salt, much fat, and all acids. Among drinks, cocoa and chocolate should be prohibited; milk in moderation only. All alcoholic drinks, especially beer and other malt beverages, are to be avoided.

The diet cannot be left to the patient's sole direction. One asthmatic who was not doing well was following instructions with a single exception; he clung to hot cakes for breakfast. On the other hand, an attack was induced in another patient by eating spinach, which is ordinarily well borne. Careful scrutiny of the patient's selection of foods is thus shown to be necessary. Bernard Oettinger (Medical Record, November 9, 1912).

CHOREA, SALVARSAN IN.

The authors report 25 cases of chorea, in children ranging in age from 8 to 19 years, in which the abnormal movements rapidly disappeared after 3 or 4 intravenous injections of 0.2 to 0.35 Gm. of salvarsan. These injections were given weekly, and recovery regularly took place

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after three or four weeks. The general condition of the patients was also always greatly ameliorated,—so much so that the authors consider salvarsan injections to be the method of choice in the treatment of this disease. Although the possibility of syphilis as a cause of chorea has been suggested, the Wassermann reaction was completely negative in each of the 8 patients in which it was tested. The favorable effects of the drug appear, therefore, to have been due either to its beneficial influence on general nutrition or to a direct parasiticidal action upon the as yet imperfectly known pathogenic agent which gives rise, in all probability, to chorea. Pierre Marie and C. Chatelin (Bulletin de l'Académie de Médecine, December 10, 1912).

DIABETES MELLITUS, TREATMENT OF.

The treatment of diabetes due to metabolic errors resolves itself into four problems: 1. The patient must have his blood and tissues freed as nearly as possible from the sugar and the dangerous acetone bodies with which they are saturated. 2. The carbohydrate tolerance must be determined, and, when found, must be increased. 3. A diet must be furnished which will provide energy sufficient to sustain life, but will not increase the ingestion of sugar beyond that which the body can oxidize. 4. Constipation must be prevented or relieved, as that condition increases the toxemia and lowers the patient's vitality.

It should be remembered that practically every foodstuff is capable of yielding a certain amount of sugar, and to give the patient *carte blanche* as to quantity of food means that, no matter how carefully the kinds of food are selected, he is going to take more carbohydrate than his system can handle. Worse even than this is the enormous tax on the already overstrained emunctories that the ingestion of large amounts of proteins and fats causes. There is little doubt that many cases of diabetic coma are brought on by the patient eating, not wisely, but too well, of articles of diet that in moderation are harmless. So important a factor is the quantity of food that many mild cases of diabetes will respond to a simple restriction in the amount of food permitted, without reference to the kind.

For the first two weeks the patient is to be restricted to a careful antidiabetic diet, unless the sugar in the urine practically disappears in less than that time. Then the carbohydrates are to be cautiously and gradually increased, always warning the patient of the danger of overeating the *permissible* products. Should the sugar persist, the patient must be put to bed and restricted to a diet of one raw egg and 2 ounces of olive oil three or four times a day. The free use of a mildly alkaline drinking water must be continued.

If this treatment results in any symptoms of acidosis, the amount of oil given must be decreased and small quantities of carbohydrates cautiously given, the patient, of course, remaining in bed. If, in spite of this treatment, symptoms of coma develop, sodium bicarbonate may be tried.

Mastication is one of the most important details in the treatment. The patient should chew each mouthful of food thoroughly. Constipation must be overcome, if necessary by the aid of castor oil and olive oil. Salines and drastic purgatives should be avoided. The following combination is recommended by the author: Olive oil, castor oil, glycerin, of each, 160; gum arabic, 18; flavoring (oil of cassia or gaultheria), 0.5.

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A moderate mental laziness combined with moderate physical activity is the ideal for the diabetic.

If gluten flours are used, their starch content should be ascertained before they are recommended. Many, if not most, of the gluten flours contain dangerously high percentages of starch. The diabetic flour advised by the author is:—

Unadulterated soy-bean flour	350
Unground poppy seed	30
Eggs	250
Pure baking powder	15
Water	340

Gluten breads, even of best quality, must be used in moderation. The starch-hunger of the diabetic makes him unreliable when his dietary is under consideration. A close watch must be kept of him. Printed instructions and the requirement that the patient keep a dietetic diary are great helps. A. J. Hodgson (Canadian Medical Association Journal, October, 1912).

EDEMA, LOCAL TREATMENT OF.

In marked edema of the legs, which often resists all treatment, especially when the patient declines to permit the limbs to be incised, the writer has obtained good results from the local use of hypertonic saline solutions. A solution is used containing 25 to 50 Gm. of sodium chloride to the liter of distilled water. Gauze compresses are lightly soaked in this fluid and are wrapped round the legs. A thick layer of absorbent cotton is placed over the compresses and the whole held in place by bandages. If the dressing be left on all night, the cotton will be found soaked with fluid next morning, and often the sheets and mattress will also be wet. The reduction of the edema is correspondingly marked.

The author believes the process to be one of osmosis, the hypertonic saline solution attracting the water directly through the skin. He admits that there are certain difficulties in the way of this hypothesis, but maintains that the facts are beyond dispute. Constitutional treatment must, of course, not be neglected, or the anasarca will promptly re-form. Equally good results were obtained in all edemas, whether due to broken compensation, Bright's disease, or other conditions. Pathault (Journal de médecine et de chirurgie pratiques; Interstate Medical Journal, October, 1912).

ENDOCARDITIS, BACTERIAL, LESIONS OF SUBACUTE.

Some of these cases, the author points out, present a clinical complex that appears to have been entirely overlooked. The striking feature is a peculiar diffuse brown (sometimes quite dark) color of the face. The rest of the body may show some pigmentation. There is evidence of a valvular lesion; there is more or less anemia, usually a palpable spleen, and usually also tenderness of the lower sternum. The patients feel weak and do not sleep well. Petechiæ occasionally occur. There is fever from time to time, but it is usually low. Erythrocytes are found in the urine in some of the cases. The subsequent history of such cases is not yet known; 1 case died with symptoms of cerebral embolism. The curious change in the color of the face is, the author believes, of great importance in the recognition of some of the cases of endocarditis with healing or healed lesions. Some cases with bacteria in the blood also develop a certain amount of brown or *café-au-lait* color. Libman (American Journal of the Medical Sciences, September, 1912).

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FRACTURE OF HIP, TREATMENT OF INTRACAPSULAR.

In healthy adults, say up to 55 years, treatment of fracture of the neck of the femur by longitudinal traction alone will not infrequently result in loose and disabling non-union, often with severe pain, for a year and a half or longer. Treatment in these cases by longitudinal combined with lateral traction, or by putting them up in wide abduction in plaster of Paris, will usually result, on the other hand, in sufficient fixation to give a useful and serviceable limb. Of the two methods of treatment, that by longitudinal and lateral traction is by far the easier to apply and is more suitable the older the patient. For the plaster cast to be efficient, it requires great skill in its application, and it is better adapted to the younger patients. In cases in which the fracture runs down toward the trochanters, firm union and fixation may take place after a period of disability exceeding a year.

The surest way of remedying cases of ununited fracture of the neck of the femur is to cut down, freshen the edges of the fragments, pin them together with screws, nails, or other means, and put them up in the abducted position; but when foreign bodies are inserted to pin the fragments together they are likely to cause discomfort sufficient to necessitate their removal, and firm union can also be obtained by freshening the surfaces of the fragments, jamming them together by widely abducting the limb, and fixing it in plaster of Paris without the use of any nails, screws, or other appliances.

In cases in which operation for one reason or another is inadvisable, much relief can be given by conservative measures. The best method is to fix the limb in a position of wide abduction by means of a plaster-of-Paris cast extending from the waist to the toes. This abduction is to be obtained either under general anesthesia or by weight extension with the limb in an abducted position, which is increased to its limit while the patient is confined to bed for a week or two. The immediate result is a marked lessening of the pain and increased comfort in locomotion. Persistent use of the plaster bandage gives the greatest relief and causes the quickest fixation. When, however, for any reason the use of the plaster-of-Paris bandage is undesirable, it may be substituted by a brace, though this is usually not so efficient.

Persistent use of non-operative conservative measures may be roughly estimated to give after the lapse of two years about 40 per cent. of cases with firm, painless hips. Another 40 per cent. will be very much improved and may or may not earn their living, according to their industry, their habits, and their surroundings. Twenty per cent. will probably remain so much disabled as to be unwilling to work even though pain may not be great, and will usually walk with a cane.

In the aged many cases are of necessity to be treated with a view solely to maintaining life, but in not a few instances the vitality is such as to justify an attempt to give a serviceable limb. In these cases the combined longitudinal and lateral traction is usually the method of choice, although under exceptional circumstances such as abundant skillful aid and sufficient facilities, fixation in the abducted position in plaster of Paris may also be used. Gwilym G. Davis (Annals of Surgery, October, 1912).

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GAS-BACILLUS INFECTION, TREATMENT OF.

It seems, according to the author, that, in this country at least, the *Bacillus aërogenes capsulatus* is conceded to be the specific cause of gas infections, the bacillus of malignant edema not having been satisfactorily proven as able to produce gas in the human body, while various other organisms, at times credited as its cause, lack the necessary careful cultural laboratory data as proof.

The disease can be classified into superficial and deep. The former class is easily combated; the latter requires prompt and energetic action.

The incubation period is very short. In 15 of 25 cases reported by the author, pain out of all proportion to the trauma, coming on twelve to thirty-six hours after injury, was the first sign of trouble, and this was soon followed by a sudden rise in temperature. These manifestations seem to be the forerunner of this condition. Pus is seldom present, but any wound resulting from traumatism with a gangrenous appearance, coupled with a sudden rise in temperature and pain, even without the presence of gas in the wound or emphysema in the tissues, should excite suspicion.

Prophylaxis is the most important aspect of treatment. All wounds on which great force has been exerted, and especially those contaminated by soil and dirt-covered objects, should be treated as if infected with gas bacilli. They should be left open where possible and thoroughly irrigated with peroxide. They should be lightly bandaged, and where possible even this should be discarded. They should be inspected frequently and irrigated quite often, and never incased in plaster. On the first sign or symptom of infection, a smear should be taken and examined. The wound should be freely opened if sutured, and if on the extremities, where most of these infections occur, the limb should be placed in a bath or continuously irrigated. If the condition is extensive, free incisions should be placed and the whole field widely exposed to air. The peroxide should never be employed in full strength nor used in confined spaces or injected directly into the tissues, as it has caused immediate death in animals when thus employed.

As regards amputation, which it seems should be resorted to rarely if the best results are to be obtained, spinal anesthesia should be employed, since these patients are, as a rule, septic and in no condition to withstand a general anesthetic. Walter C. Cramp (Annals of Surgery, October, 1912).

GASTRIC AND DUODENAL ULCERS, BISMUTH IN.

Bismuth, the author points out, can never be regarded as a substitute for the rest cure in the treatment of ulcer. Its general purpose is to reinforce this treatment, especially when the latter fails, or when the ulcer takes a chronic course, tends to relapse, or gives rise to considerable pain; and furthermore, in the treatment of outdoor patients. If in these cases there is hyperacidity, bismuth is so much the more indicated, for it is more effectual in hyperacid cases than in others. It is least indicated in cases marked by achylia or subacidity, for in the absence of hydrochloric acid it cannot be decomposed, and its efficiency is restricted to the exercise of its physical properties.

The chemical action of bismuth within the stomach and duodenum is (1) antisecretory, (2) astringent, and (3)

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antiseptic. The effective constituent when the bismuth salt is decomposed is not the bismuth oxide formed, but the simultaneously liberated nitric acid; the three chemical effects mentioned are due to this factor. The chief requirement in the treatment, however, is to have the protective layer over the ulcer large and resistant from the first, and to renew and supplement it at regular intervals. As soon as the subjective complaints are relieved, the daily bismuth dose may be tentatively reduced, and, as the treatment proceeds, the drug administered only every second day. If there should be no trouble on the day that bismuth is withheld, the intervals may be extended, until finally the treatment is discontinued entirely.

As advised by Fleiner, bismuth suspensions (10 to 20 Gm. of bismuth subnitrate in a tumbler of warm water) are taken by mouth, in the morning, on an empty stomach, the latter having been cleansed three-quarters of an hour to an hour previously with about 150 c.c. of Carlsbad or Vichy water. The bismuth is given daily, the dose being more or less rapidly increased, reduced, or discontinued, according to the clinical course. The best preparation to use, according to Fleiner, is bismuth subnitrate which has been precipitated from a boiling-hot mixture, as this is much more finely powdered than a preparation precipitated from tepid or cold fluids.

A modification of this method consists in administering bismuth in oil by combining the bismuth treatment with Cohnheim's oil treatment—a very practical and successful method. The same doses of bismuth are taken, finely suspended in olive oil, several times daily. According to Stepp, bismuth suspensions in chloroform water are very efficacious:—

	Gm. or c.c.
℞ Bismuthi subnitratis	3
Chloroformi	1
Aquæ destillatæ	150

M. Sig.: One to two tablespoonfuls to be taken hourly for several weeks.

It is not unlikely that the chloroform conduces to the anodyne effect.

The bismuth treatment is undeniably attended with some disadvantages. Liberal and prolonged administration is not infrequently followed by constipation, which has to be relieved either by enemas or by combination of the bismuth with magnesium oxide. It is equally possible for large doses of insoluble bismuth to cause diarrhea.

There have also been cases in which the bismuth crust became so indurated and was so firmly consolidated with the ulcerous base that the ulcer underneath was prevented from healing, the crust acting like a foreign body. Again, the stomach may not have sufficient tonic power to bear a preparation as heavy as bismuth subnitrate administered in large doses and for a long time.

All these disturbances, which will occasionally arise, should be considered when deciding upon bismuth treatment. In short, it is necessary to adapt the treatment to the individual case.

Boas prefers the subcarbonate of bismuth to the subnitrate. An advantage of the former is that it colors the feces white, thereby facilitating the recognition of any coarse admixture of blood. An objectionable feature of the subcarbonate, however, is that, on entering into combination with hydrochloric acid of the stomach, it releases a certain amount of carbon dioxide, which under certain circumstances may give rise to considerable distention of the gastric

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wall and the ulcer. Besides, the beneficial effect of the liberated nitric acid is lost.

Bismuth subgallate is a good substitute for the subnitrate. It can be freely suspended in water, and is non-toxic, but its constipating effect is greater than that of bismuth subnitrate. It can be suspended not only in water, but, as recommended by Ageron, in oil. Charles D. Aaron (American Journal of the Medical Sciences, October, 1912).

ILLUMINATING-GAS POISONING, TREATMENT OF.

In the *first stage,* i.e., that preceding the loss of consciousness, fresh air combined with mild stimulation, such as aromatic spirit of ammonia, should be practised. In this stage the nausea, vomiting, and headache are the most troublesome symptoms. The greater part of the gastric symptoms will be relieved by some effervescing salt, the patients feeling much better after eructating or vomiting. Effervescing phosphate of sodium may be used. There is no true antidote for gas poisoning other than oxygen. The headache usually persists for twenty-four or forty-eight hours and may be relieved by any of the drugs used for this condition. Violent exertion is to be avoided, as collapse is a danger; men who have become aggressively delirious have collapsed.

In the *second stage,* in which the patient is unconscious but breathing, it may be necessary, if the respirations are not stertorous, to assist the respiratory action. The Howard method (compression of the lower part of the chest in rhythm, with expiration) has been found efficient. Oxygen must be administered, preferably under pressure.

Various mechanical devices for administering artificial respiration and supplying oxygen have been tried, but until lately all were unsatisfactory. At present the "pulmotor" is being used.

Medicinally, the patient should be freely given hypodermics of stimulants, such as camphor, caffeine, digitalis, and strychnine. Heat should be applied when indicated, and, as there are several cases in which the persons have collapsed when taken out into cold air, it is always better to start treatment in a warm room. A very important adjunct to this plan of treatment is the massaging of the muscles after aërating the lungs, the resulting increase in the general circulation often promptly restoring the normal oxygen balance.

The above methods are usually followed by prompt recovery. If they are not successful, venesection, with the introduction of normal salt solution, should be employed. In 2 cases the author saw this method followed by rapid and complete recovery, although there was mental confusion for some time. He believes it should be employed when the patients are in fairly good condition when rescued, that is, with a fair pulse, stertorous respirations, unconsciousness, and no immediate signs of collapse. However, the "pulmotor" has made its necessity less frequent. Should the "pulmotor" fail, the best method is the direct transfusion of blood as practised by Crile.

In the *third stage,* with the patient not breathing and unconscious, artificial respiration, oxygen, stimulation, and heat are imperative. Transfusion is indicated. The Schäfer, or "prone-pressure," method of artificial respiration is the best to use.

Artificial respiration has been maintained for six hours, with subsequent recovery of the patient.

If the above methods of treatment are

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carried out and the patient is not dead when discovered, practically all cases should recover in forty-eight to seventy-two hours from the immediate effects of the gas, no matter how concentrated the carbon monoxide causing the poisoning. The great difficulty in treatment has been the failure of both laity and physicians to realize that inhalation of oxygen under pressure, combined with venesection or blood transfusion in severe poisoning, will save practically all cases. Robert S. McCombs (American Journal of the Medical Sciences, Oct., 1912).

INDEX OF ACIDOSIS, AN.

The author has devised a simple method by which the acetone bodies can be detected, and their amount roughly estimated. It is based on the observation that early in a case of acidosis only small quantities of acetone are present in the urine. As the condition advances this increases and diacetic acid appears. When this latter substance is present in any considerable amount beta-oxybutyric acid will also be found. As the condition later clears up beta-oxybutyric acid is the first to disappear, then diacetic acid, and, lastly, acetone.

The method employed is to test the urine first for acetone by *Lange's test* (*i.e.*, nitroprusside of sodium, glacial acetic acid and urine, with strong ammonium hydroxide poured on top). If this is positive, *Gerhardt's test* for diacetic acid is tried (*i.e.*, the port-wine color produced by ferric chloride solution when added to urine containing diacetic acid). If this is positive, two test-tubes are taken. Into one is placed 10 c.c. of a *standard solution* of ethyl acetoacetate, 1 c.c.; alcohol, 25 c.c.; distilled water, to 1000 c.c. Into the other test-tube, which should be of the same caliber as the first, is placed 10 c.c. of the urine to be tested, and 1 c.c. of ferric chloride solution (100 Gm. of ferric chloride dissolved in 100 c.c. of distilled water). The fluid is allowed to stand a couple of minutes, and then the color of the two test-tubes compared against the light. If the standard solution is lighter in shade than the urine mixture, the latter is diluted with distilled water until the colors match, and the volume to which it has been necessary to dilute the mixture noted. From this a numerical value for the acidosis index per liter is obtained in accordance with the following schedule:—

Lange's test positive Gerhardt's test negative	0.5
Gerhardt's test positive:—	
Vol. of urine sol.	
10 c.c.	1.0
15 c.c.	1.5
20 c.c.	2.0
25 c.c.	2.5
40 c.c.	4.0
100 c.c.	10.0

The acidosis index proper is estimated by multiplying the acidosis index per liter by the quantity of urine in liters passed in twenty-four hours. The acidosis index approximately corresponds to the acidosis in terms of beta-oxybutyric acid, *e.g.*, an acidosis index of 25 equals, approximately, 25 Gm. of beta-oxybutyric acid. T. S. Hart (Quarterly Journal of Medicine, vol. v, No. 20, 1912).

JOINT DISEASE, CHRONIC, TREATMENT OF.

Stress is laid by the author on the fact that certain joint cases which are rebellious to all other means of treatment, as proved by long trial, can be arrested by means of a proper dietary coupled with colonic lavage. The meas-

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ures as typically employed in the successful treatment of a number of cases were as follows:—

Diet.—One glass of water on rising. Breakfast, consisting of a small amount of cereal, with cream and sugar, and one or two slices of well-done toast, with butter, hot drink (imitation cereal coffee), with cream and sugar if desired.

Between breakfast and lunch: Two glasses of buttermilk and one glass of water.

Lunch: Clear soup (or lettuce or spinach), one roast potato, toast (two slices), imitation coffee.

Between lunch and dinner: One glass of buttermilk and one glass of water.

Dinner: Clear soup (or twice a week a small amount of roast chicken, or twice a week 1 egg), toast or lettuce, imitation coffee, apple sauce.

Between dinner and bedtime: One glass of buttermilk and one glass of water.

Every day the patient was given a simple enema and then *high colonic lavage,* with about 1½ quarts of normal salt solution, the washings being repeated until they came away fairly clear.

The dietary can be so greatly modified during the course of improvement as eventually to differ but slightly from that of a normal individual, and the lavage can be quickly dispensed with entirely.

Coincident with the improvement there may occur an increased output of ethereal sulphates and an increased output of fecal bacteria.

A definite proportion of these sufferers can be benefited if not cured in this manner. The adoption of these methods should be attempted only in cases suitably prepared for it or in those free from demonstrably removable cause. They should be applied gradually, with due respect for the caloric needs of the individual, and with constant regard for the weight. Only the most painstaking attention to detail will insure success. Ralph Pemberton (American Journal of the Medical Sciences, October, 1912).

OCCULT BLOOD, NEW REAGENT FOR DETECTING.

The authors point out that, while benzidin, up to the present, has been the most satisfactory reagent for clinical work, we have in orthotolidin a new reagent that is even more satisfactory, on account of its greater delicacy, its more lasting color, and the fact that it can be made into a solution that retains its delicacy unimpaired for three or four weeks. All this so simplifies the test that it may well take a place beside the familiar tests for albumin and sugar in the equipment of the practitioner. The substance is a crystalline basic body of the aromatic series, very slightly soluble in water, easily soluble in alcohol and ether, and closely allied to toluidin and benzidin.

To ascertain its value as a clinical reagent it was tested by the authors against guaiacum, benzidin, and phenolphthalein, first of all with watery solutions of blood and then with blood in urine, feces, and stomach contents. It was found that blood in urine was detected by guaiacum and benzidin in dilutions of 1:6000, the reaction of benzidin being very slightly the more marked, but still only slight and lasting only a very few minutes, while tolidin detected it in a dilution of 1:24,000, giving with this dilution a deep greenish-blue color that lasted half an hour or more. Phenolphthalein failed to give a positive reaction when a solution of blood in urine of 1:2000 was added. For the detection of blood in feces, the

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stool of a healthy person on full meat diet was used. It was found that guaiacum could detect blood in dilutions of 1:10,000; benzidin and tolidin, of 1:100,000, while phenolphthalein again proved to be a very poor clinical reagent, detecting only dilutions of 1:2000, and this only when additional hydrogen peroxide was added.

When testing for blood in stomach contents, the material withdrawn from the stomach after an ordinary test-meal was used. Phenolphthalein proved to be of no value. Guaiacum just detected blood in dilutions of 1:5000; benzidin and tolidin in dilutions of 1:30,000.

While benzidin thus appeared equal to tolidin for the detection of blood in feces and stomach contents, this was true only for freshly prepared solutions, older solutions losing 50 per cent. of their delicacy in twenty-four hours, whereas tolidin remained unchanged for from three to four weeks, an important fact adding to the ease with which the test can be carried out. Another point in favor of tolidin is that, when the blood is in small quantity, the reaction increases gradually in intensity and persists longer than with the other reagents, so being more easily read. R. F. Ruttan and R. H. M. Hardisty (Canadian Medical Association Journal, November, 1912).

OLIVE OIL, USES OF.

The following indications for the use of olive oil are pointed out by the author:—

In tuberculosis olive oil is capable of causing a rapid increase in weight. In a young woman suffering from pulmonary tuberculosis he ordered the administration of ½ ounce two hours after each meal, increasing ½ ounce per dose every week until 3 ounces *t. i. d.* were taken. The patient, whose weight had been declining, gained twelve pounds in seven weeks and improved in all other respects.

The oil is of great value as a nutrient in wasting diseases. In young children and infants good results may be obtained by its administration by inunction once or twice daily. Babies suffering with malnutrition and stubborn constipation are benefited by the administration of 1 dram of the oil once or twice daily.

The oil is an excellent demulcent laxative in cases of hemorrhoids and fissure of the anus. The author has seen the most stubborn cases of lead colic relieved and the persistent constipation overcome by the administration of a tumblerful of olive oil once daily. On the second or third day there was free catharsis and a subsidence of the nervous manifestations.

Obstinate and painful cases of dry pleurisy may be relieved by the injection of ½ dram of sterilized olive oil into the pleural sac over the site of the friction sounds.

In progressive anemia, symptomatic or pernicious in type, the administration of equal parts of olive oil and glycerin in gradually increasing doses two hours after each meal is a valuable procedure, ofttimes yielding excellent results.

Rectal enemas of olive oil are highly useful in the treatment of mucomembranous colitis, the constipation of neurasthenia, and in intestinal atony. In typhoid fever the oil, administered as a food in 1- to 3- ounce doses *t. i. d.*, is a valuable adjuvant, assisting to overcome the strong tendency to emaciation. As a laxative it is unequalled in this disease. A high injection of lukewarm olive oil as occasion demands is also very gratifying to these patients.

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The oil is best administered cold in gradually increasing doses about two hours after meals and may be taken alone or flavored with glycerin, orange juice, coffee, or syrup of sarsaparilla. Israel Bram (Medical Review of Reviews, September, 1912).

PERTUSSIS, BACTERIN TREATMENT OF.

The writer used a pertussis bacterin in 40 cases of whooping-cough. It was found that, when a hypodermic injection of 20 million bacteria or more is administered, no general or local reaction is observed. The pain from the injection is trifling. A few hours afterward the cough seems to become worse, and this period (negative phase) extends over twenty-four hours with a moderate dose (30 million), but may extend over two or three days after a large dose (100 million). After this period of aggravation of the symptoms, a period of two to four days follows in which great improvement is observed. Sometimes the effect is quite remarkable. In about one-fourth of all the cases no effect whatever could be observed. In a number of cases the effect was doubtful, but the course was mild and the injections were repeated several times. Rashes occurred in 3 cases. In cases in which the whooping-cough is complicated with bronchitis or pneumonia the effect is uncertain and may do harm.

As to dosage, in the first few cases about 10 million bacteria were used, hypodermically. Later 20 million, the contents of one vial, became the dose. The most pronounced effects occurred when 30 to 50 million bacteria were injected. An attempt to improve the efficiency of the treatment by larger doses was met by a great increase in the length of the negative phase, and sometimes in a retardation of the period of improvement. On the other hand, one good dose (100 million) may almost cure the disease.

In general, since the injections of vaccine diminish, for a short period, the resistance and often aggravate the clinical symptoms, they should not be repeated too frequently. The interval should not be less than three days when moderate doses are used (10 to 20 million), and if large doses (20 to 100 million) are given the interval should be at least five days. Since the writer did not succeed in aborting the attacks by using the vaccine early, and since his best results were produced at the height of the disease, it became his practice to wait until the disease was well advanced, and then by giving two or three full doses to modify the severity of the symptoms. Nothing that the writer tried would act so well as this vaccine, which often changed the disease in twenty-four hours to a remarkable degree. In young infants moderate doses should be given early. The whole course, then, will not be so severe and complications will be minimized.

Nearly all the children treated received sodium bromide and codeine in order to control the cough. The benefit, however, was in no instance due to these drugs, as they had been given before the bacterin was administered.

It is questionable, the author concludes, whether the vaccine hastens permanent immunity. John Zahorsky (Interstate Medical Journal, Oct., 1912).

PITUITARY EXTRACT IN OBSTETRICS, USE OF.

The author's experience with pituitary extract has led him to the following conclusions: It is inactive in the presence of fever. It is a powerful galactogogue. It stimulates uterine contractions in

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from fifteen to thirty minutes after being injected intramuscularly. It causes a rise of blood-pressure and slowing of the pulse, the highest pressure occurring between twenty and thirty minutes after the injection. It does not cause an inflammatory reaction at the site of the injection or any noticeable nervous symptoms. Chas. B. Reynolds (American Journal of Obstetrics, October, 1912).

PROLONGED LABOR, MANAGEMENT OF.

An unduly prolonged labor during the first or second stages, or a sudden accident, such as hemorrhage, convulsion, or prolapsed cord, at any stage, is a common cause of fetal death during labor. Of all the signs of impending danger to the infant, slowing of the heart sounds is most important, though rapid or irregular heart sounds, violent movements of the fetus, followed by cessation, are all suggestive. Throughout a protracted labor the heart sounds should be noted every half-hour. An unduly rigid or edematous cervix, so often seen in primiparæ whose sexual organs and nervous systems are characterized by hypoplasia, is a risk to the child's life in the first stage of labor, for in these cases the nagging pains inhibit uterine contraction, prolong labor for hours, and exhaust the patients. These cases differ from the other types of rigid cervix in strong, healthy women, with or without the cicatrices of former lacerations, in that anodyne drugs such as morphine, chloral, or scopolamine are not to be employed. Complete anesthesia with surgical means is necessary to open the birth canal.

While the author is sure that nature protects the unborn child from narcotic drugs given to the mother during labor, he never gives more than ¼ grain of morphine with 30 grains of chloral hydrate as the maximum doses throughout the first stage of labor, and often less is given.

In prolonged labors, incomplete flexion in occipitoposterior positions, at the pelvic brim or on the pelvic floor, or posterior rotation, must be recognized and appropriately treated. Face presentations must be recognized and an anterior position of the chin secured early in the labor. Transverse presentation, twins, breech—any deviation must be known early in the labor, before, indeed, the diagnosis of prolonged labor can be made, for each abnormality of presentation requires its own time, and a prolonged labor is not to be measured by hours only.

The usefulness of forceps is now disappearing for serious bony obstruction to labor, while its field is enlarged for assisting labor after preparing the soft tissues of the canal for expeditious delivery. When an obstetric emergency arises, endangering either the mother or the child, means are at hand safely to open the soft canal. The following is a summary of the efficiency and danger of these:—

Bag dilatation is available to the average obstetrician, especially for use in the home when immediate delivery is not required.

Manual dilatation will meet most emergencies when the cervix is effaced and the external os is the only obstacle.

Mechanical dilators are dangerous. They may be used to *begin* dilatation in some urgent cases.

Vaginal hysterotomy is the most rapid and most efficient means, but requires *always* a skilled vaginal surgeon and hospital environment.

Abdominal section is to be preferred when cicatricial contraction or ana-

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tomical defects are extreme. Richard C. Norris (Therapeutic Gazette, September 15, 1912).

PRURIGO.

After a thorough discussion of the characteristics of this affection and its relations to other skin diseases, the author concludes that prurigo is a distinct papular affection, and not an urticaria, though in an early stage there may be difficulty in distinguishing it from that disease. The term "prurigo" should be reserved for pruriginous affections presenting the characteristic papule and followed by lichenification. For the avoidance of confusion the various types of disease should be qualified as *prurigo mitis, prurigo gravis,* and *prurigo ferox.*

Though prurigo usually begins in infancy, it may begin much later in life. Prurigo mitis never develops into the severe forms of the disease. The papule of prurigo may in some cases follow, and in other cases precede, the itching. Hereditary influence in the etiology of prurigo is doubtful except as a factor in a family neurosis. While prurigo is always an intractable affection, the prognosis in prurigo mitis is not necessarily hopeless.

The treatment must be mild or vigorous according to the intensity of the affection, and must be applied again and again as the symptoms reappear. The complicating lesions having been dealt with, the indications are to improve the patient's nutrition by good hygiene, generous diet, and codliver oil; to control the itching by baths medicated with starch, sulphurated potash, or creolin, and to dissipate any coexistent eruption. All irritating preparations must be avoided. The external remedies employed by the Vienna school are sulphur, tar, soap, and naphthol. The sulphur is used in the form of soap, of solution of sulphur of potash, or of thermal waters; the tar, either pure or mixed with olive or codliver oil. The tar is used especially to control the itching. Brocq holds that the best of the topical remedies is codliver oil, one recommendation of which is that it can be used in all stages of the affection, even the most acute. If the surface is smeared with the oil the applications must follow each other quickly, and he considers it better to envelop the parts in an impregnated many-folded bandage covered with an impermeable varnish. He speaks highly of a preparation of codliver oil and white wax in the proportion of 3 to 1, used as a pomade, with or without covering. Codliver oil may also be used in the form of ointment, with which, when there is intense itching, beta-naphthol or phenol may be incorporated. Colcott Fox has had excellent results from the use of a phenol ointment; Wolff, from alternate injections of phenol and pilocarpine. In severe and rebellious cases the patient may be soaped in a warm bath, and a tar preparation or Vleminckx's solution applied, the patient continuing in the bath or lying in bed with the application still on. If such vigorous measures as these be employed they must, of course, be carefully watched. Occlusive dressings, such as Unna's glycogelatin, or caoutchouc, have been found useful in preventing the eruption, though occlusion fails to influence the itching. Radcliffe-Crocker's chief means of treatment were rest in bed, the application of naphthol ointment, and the administration of cannabis indica. Thyroidin is well spoken of as favorably influencing the eruption, at least temporarily. Brocq believes that he has seen cases of even rebellious

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prurigo mend under radium therapy, and the author thinks that radium and the X-rays may prove to be the least unpromising methods of treating this affection. In the stage of lichenification he has had good results with radium. He cites the case of a woman who had suffered for seven years from intolerable irritation. An apparatus 4 sq. cm. in extent, containing 80 mg. of pure radium bromide, and shielded with $\frac{1}{100}$ mm. of aluminum, was applied for ten minutes to successive patches until the whole area had been treated; the exposures were twice repeated at intervals of four weeks, with the result that, save for a very small patch at the nape of the neck, the lichenification disappeared. There was also great improvement in the patient's general condition. Sir Malcolm Morris (Proceedings of the Royal Society of Medicine, July, 1912).

SPRAIN FRACTURE AN ESSENTIAL TO OCCURRENCE OF DISLOCATION.

Practically all, if not all, dislocations, the authors point out, are permitted by the primary occurrence of strain of tendons and ligaments, followed by avulsion of tendons, then sprain fracture or gross fracture. It is possible, however, that some dislocations are permitted to occur by separation of the fibers of the capsule in place of by sprain fracture or gross fracture. All dislocations should be skiagraphed, and, if evidence of fracture is not found at first, pictures should be taken in many planes.

All dislocations should be treated as if fracture had occurred, even in the event of negative X-ray evidence. Often there is spontaneous reduction of dislocations, and sprain fracture or gross fracture is the only evidence left that can be detected by X-ray. The sites of sprain fractures or gross fractures provide the foci from which the osteoblasts issue, in those cases showing excessive callus or covering of joint surfaces with osseous tissue; moreover, the softer tissues found in joint cavities within a short time after the occurrence of dislocations are often in some stage of transformation into bony tissue. George G. Ross and Lever Flegal Stewart (Annals of Surgery, October, 1912).

SYPHILIS, LIFE-CYCLE OF ORGANISM OF.

Although the action that salvarsan has on spirochetæ in general is phenomenal, no spirochetæ being found in films made from the discharge from a chancre forty-eight hours after a single injection, recurrences occur again and again. Trypanosomiasis and syphilis are alike in this respect, and the frequent recurrence of symptoms met with in both diseases is probably dependent, the author believes, on the cycle which the parasite goes through in the body of the host.

In his researches he started off with the idea that the *Spirochæta pallida* was the male gamete of some unknown protozoön, his reason for thinking that it was an end-phase of some cycle being the fact that he had never seen the organism divide. If all syphilitic lesions are due to the spirocheta and the infection is a direct one of that body from one person to another, it cannot but seem odd that one should not observe division in every film examined.

It has been mooted for some time past that the *Spirochæta pallida* has a resting stage.

For his investigations the author cut sections of chancres, lymphatic glands, and various forms of syphilitic skin lesions, and examined films obtained

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from their juice, both *in vivo* and by fixed specimens. He found peculiar granular bodies not present in non-syphilitic tissues, and the interpretation he put upon them is as follows: The commencement of the cycle is with a sporozoite or infective granule, which, being motile, reaches a cell and enters it; the cell is always a large mononuclear leucocyte. The sporozoite then becomes motionless, and increases in size at the expense of the protoplasm of the cell, the nucleus of which always remains intact. The sporozoite in some cases steadily increases in size, while in others it appears to divide. Where there is no division the development goes on until spirochetæ are formed—the male sexual cycle. Where there is division, one-half runs the course of the male sexual cycle, while the other runs the course of the female sexual cycle; the latter at this stage seems to leave the mononuclear.

In the male cycle the organism becomes vacuolated and later transformed into an irregular coil. This, in turn, becomes broken up into irregular, short, stout, and wavy bodies, and from these the delicate, long, and corkscrew-shaped organism, the *Spirochæta pallida,* develops. This is the adult male gamete, and it probably has no more necessity to divide than a spermatozoön. It sometimes happens that circular bodies with spirochetæ coming off, like the spokes of a wheel from the axle, are found in the coil and free outside the cell.

The female sexual cycle is the same as the male up to the point of vacuolation. The female organism then takes a circular form, and in the circle there appear to be 4 or 5 distinct pear-shaped bodies. Two of these bodies then fuse and become crescentic; the remainder, one by one, join in until a spherical mass is produced. This is, in the author's opinion, the adult female gamete.

The act of fertilization he has not yet seen. After fertilization a zygote is formed, which then appears to divide into two and subdivide into four. These four masses are the sporoblasts. Each sporoblast divides and subdivides until numerous sporozoites are formed; when examined *in vivo* the cell appears to be alive with the movement of all the sporozoites. It then bursts and the sporozoites are set free to start the sexual cycles again. This completes the sporogony.

The infection is probably conveyed by the sporozoite and not by the *Spirochæta pallida.*

There is no doubt that these bodies can still be found after treatment with salvarsan, and it is yet impossible to say what action antisyphilitic treatment has upon them. Whether it is desirable, or even necessary, to give as many injections of salvarsan as is now the rule, and whether our aim to obtain a negative Wassermann reaction is a right one, are points which must remain *sub judice,* as our interpretation of the Wassermann reaction may be altered as the result of this discovery. From a point of view of diagnosis the discovery of the life-cycle of the syphilitic parasite means a distinct gain, because bodies other than, and easier to find than, the *Spirochæta pallida* can be demonstrated with ease, and the old difficulty of being unable to distinguish one granuloma from another in section is partly done away with. J. E. R. McDonagh (British Journal of Dermatology, November, 1912).

SYPHILIS, RATIONAL THERAPY OF.

Salvarsan, when given intravenously, is rapidly excreted, and exercises its influence for only a relatively short time;

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the author therefore believes that cases in which there is no distinct and definite indication for an intravenous salvarsan injection are better treated in other ways.

He would construe the following conditions as being possible reasons for intravenous salvarsan injections: impending perforation of the palate; certain luetic lesions of the central nervous system, such as meningitis and gumma; intense specific bone conditions, periostitis and gumma; extreme involvement of the mucous membranes; early cases of syphilis in which secondary symptoms have not yet appeared, and especially cases of syphilis refractory to thorough mercurial treatment.

When the diagnosis in beginning syphilis is positively made, energetic and thorough treatment should be initiated as early as possible, so that the depression of the secondary stage may be averted. The treatment of election is the combined salvarsan-mercury treatment, unless there are distinct contraindications, such as cardiovascular disease or lesions of the optic nerve.

Intravenous salvarsan injections in full dose, to be immediately followed by 12 to 15 intramuscular injections of mercury salicylate, preferably suspended in oil of sesame, are given at intervals of five or six days. Hoffmann recommends 4 complete courses of this kind, given within the first year of the disease. Under such treatment, in all probability, a very intense, enduring effect, if not a cure, could be obtained in almost all cases. If treatment of this kind is carried out in cases of early primary lues, the Wassermann reaction seldom becomes positive and then only for a very short time; while in cases showing secondary symptoms, with a positive reaction, this usually changes to negative several months before the end of treatment.

The writer himself has never been so energetic, but has used and advised an intravenous salvarsan injection, immediately followed by a series of mercury salicylate injections, and later by 4 to 6 injections intramuscularly of small doses of salvarsan, from 0.1 to 0.2 Gm. in sesame oil, after which a new series of mercury salicylate injections is inaugurated and continued at increasing intervals during the first year of the disease. In this way he has seen a fair number of cases which appear to be cured, though the time elapsed has been too short as yet for certainty. The Wassermann reactions are, however, negative and have remained so for months since treatment.

In giving injections of insoluble mercurials one fulfills an important indication, giving treatment which is trustworthy and in most cases capable of producing splendid, though not spectacular, results. In cases refractory to mercury, salvarsan in some peculiar way causes changes which prepare or blaze the way for subsequent mercurial therapy.

Patients in later cases of lues, *e.g.*, those with relapsing secondary and tertiary lesions, do well with prolonged mercury and iodide treatment; salvarsan, while of value, does not at all appear to be requisite for thorough treatment in the greater number of cases.

Mercury by inunction still remains a reliable and powerful method of exhibition. It lacks, however, the cleanliness and elegance of the injection method, though it has the advantage that it may be stopped at any moment, thus preventing absorption of mercury in a patient who is showing signs of impending or actual mercurialism.

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Pills of mercury biniodide or protoiodide are only adjuvants, which may be prescribed between "cures" if thought proper. To prescribe 3 or 4 ¼-grain pills of protoiodide a day for a case of marked syphilis, omitting other treatment, is entirely insufficient.

In all instances the patient should be placed under as good general conditions as possible, not forgetting the use of an iron tonic. He should then be treated until clinically cured, and observed for at least eighteen months more, during which time he receives no treatment, but has his blood examined repeatedly. Then if the Wassermann reaction remains repeatedly negative, one may conclude that he has been thoroughly and rationally treated. J. S. Eisenstaedt (New York Medical Journal, November 16, 1912).

TABES DORSALIS, SPONTANEOUS FRACTURE AS AN EARLY SYMPTOM OF.

From a study of a series of cases, the author finds it warranted to emphasize the fact that spontaneous fractures are not infrequently an initial or early symptom of tabes. They frequently occur before there is any disturbance of gait. All adults who have had painless or spontaneous fractures should be examined for tabes. Tabetics should avoid sudden or jerky movements, especially heavy lifting, and twisting movements. The term tabes dorsalis should be preferred to the misleading "locomotor ataxia," since an ataxic gait is not infrequently one of the latest symptoms to appear. Henry Ling Taylor (New York State Journal of Medicine, October, 1912).

TUBERCULIN THERAPY IN SURGICAL TUBERCULOSIS.

From the nature of the process of active immunization one would expect the results with tuberculin in surgical tuberculosis to be much the same with all anatomical types, and such is the fact. The one modifying factor, aside from that of the individual's response, is that of secondary infection, and one may state that, while "closed" cases do well, cases often vary according to the summation of toxic effects from the tubercle bacillus and the secondary invaders. In surgical conditions the secondary invader is not so to be feared as in the pulmonary and pleural conditions, and the secondary invasions in surgical conditions always call for some other than tuberculin treatment. One may conclude with Petruschky that we have in Koch's tuberculin a valuable agent for treating incipient tuberculosis. Until specific therapy has been tried one should never despair of a seemingly hopeless case. Thomas Wood Hastings (American Journal of the Medical Sciences, September, 1912).

TUBERCULOSIS, DIAGNOSIS AND TREATMENT OF INCIPIENT PULMONARY.

Diagnosis.—The fact is emphasized by the author that in the earliest stage of lung tuberculosis careful and accurate percussion is required for its detection, although textbooks insist almost wholly on auscultation. For the investigation of the front of the chest the patient *must lie on his back on a comfortable couch,* and must be completely at his ease and with his muscles relaxed. The practitioner should practise light percussion on the terminal phalanx of a finger of his left hand firmly pressed on the spot to be percussed. After a little practice he will have no difficulty in determining in a case of incipient pulmonary tuberculosis dull areas in the inner and in the outer part of the first intercostal space on each side. The second and the third

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interspaces must then be examined in the same way, and the remaining parts of the anterior wall of the chest and also the axillary regions. For the posterior aspect of the thorax, percussion should be practised over the inner and the outer parts of the suprascapular fossa on each side, and also over the posterior end of the spine of the scapula and the surrounding region. In a case of incipient pulmonary tuberculosis a dull area will be found in the inner part of the suprascapular fossa, quite close to the first and second dorsal vertebræ (a region normally resonant), which corresponds anteriorly to the dull area in the inner part of the first intercostal space. Similarly, a dull area (smaller in size) will be found in the outer part of the suprascapular fossa, which corresponds to a dull area in the outer part of the first intercostal space. Thirdly, a very definite dull area, as large as or even larger than the area first described, will be found in the upper part of the lower lobe at the extremity of the spine of the scapula. In examining the subclavicular dull areas more carefully, it will be found that they can usually be traced downward into the second intercostal space, being in this space smaller, but nearer together, than in the first space.

There are, therefore, six dull areas to be detected in the upper part of the lungs in a case of incipient pulmonary tuberculosis, two in each upper lobe and one in each lower lobe. Over these dull areas the only auscultatory phenomenon in many cases is a defect in the air entry. On careful auscultation one may sometimes detect a slight crepitant sound with inspiration or with expiration also; it may or may not vanish after the patient has coughed.

The six dull areas above described may all be present and even of considerable size, while the supraclavicular region, corresponding to the summit of the lung, may be still very fairly resonant.

These areas do not represent the complete picture, but they are sufficient for the diagnosis, and are, the author believes, invariably present in early pulmonary tuberculosis, though in a small minority certain areas about the angle of the scapula may become unusually definite, especially if any pleurisy develops over them.

Treatment.—If a patient inhales a combination of antiseptic vapors *persistently,* day and night (except when actually taking food), by the principle of diffusion of gases the antiseptics *must* make their way into the pulmonary alveoli, and if antiseptic drugs like creosote, phenol, and iodine are dissolved in alcohol, ether, and chloroform there must be a gradual absorption of these anesthetic agents into the blood, for this is an A. C. E. mixture, and we know that if used in greater strength it would prove the absorption by producing general anesthesia.

The author recommends the following formula for a solution to be used for continuous antiseptic inhalation:—

℞ Creosoti,
Phenolis, of each, ʒij.
Tincturæ iodi,
Spiritus ætheris, of each, ʒj.
Spiritus chloroformi, ʒij.—M.

Two Yeo inhalers are procured, so that they may be used on alternate days and properly cleansed by immersion in boiling water and careful drying. The patient is instructed to pour 6 to 8 drops of the solution on the felt of the inhaler *every hour* during the daytime, and once or twice during the night if he happens to wake. Nearly all patients soon be-

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come accustomed to wearing the inhaler at night. The object should be to keep the piece of felt constantly saturated with the solution, but so that none of it wets the framework of the inhaler itself. The base of the inhaler should be carefully wiped before it is applied, and a little vaselin or lanolin cold cream smeared over the nostrils and upper lip at first. At the beginning of the treatment a *period of rest in bed is essential.* Digestive disturbances, anorexia, and diarrhea or constipation must be treated by appropriate drugs. The patient must be supplied with a *sufficiency of easily digested food.* Malted milk dissolved in (scalded) milk given at the end of each of the four meals has proved invaluable for this purpose. *Careful disinfection of the mouth* four times daily, after the milk, is always ordered. As soon as the patient has begun to make definite progress carious teeth should be filled or removed. Antiseptic sprays may be used for unhealthy conditions of the fauces, and a spray of cocaine, eucalyptus, and parolein to relieve any nasal obstruction. *Smoking* must be absolutely forbidden.

Of 70 cases treated upon these principles 48 recovered completely, 3 were probably complete recoveries, and 10 were incompletely cured. D. B. Lees (Lancet, November 9, 1912).

TUBERCULOSIS, EXTERNAL USE OF WATER FOR ENHANCING RESISTANCE IN.

The good results obtained by the external use of water in tuberculosis will be vastly multiplied, according to the author, by improved methods. He has coined the term "neurovascular training" to emphasize the fact that there are few, if any, cases that may not be profitably subjected to a graduated daily increase of cold water, the temperature being reduced and the duration increased slowly, and, in institutions, pressure from the douche added. By this method the capacity of the nerves and vessels of the skin and its muscular structures which control the capillaries may be trained to respond with increased vigor just as the muscles of the arm may by slow and graduated accretion of weight be trained to lift heavier weights. The procedure advisable is described in several stages by the author, as follows:—

First Stage, or *Ablution.*—The extremities below the knee and elbow are to be avoided. Begin with the water at 90° F., reducing the temperature 2° or more each day until 60° F. is reached. A saturated cloth or gloved hand is passed rapidly over successive parts, which are then dried thoroughly. In ambulant cases the patient then dresses and exercises in the open air.

Second Stage, or *Affusion.*—The patient stands in water at 105° F. and from a bucket of water at 85° F. the water is dipped and thrown over the back, chest, and shoulders. He is then dried, dresses, and exercises in the open air. The temperature of the water is reduced 5° or more daily until 60° F. is reached, and, if the reaction is good, one proceeds to the third stage.

Third Stage, or *Cold Rub.*—The patient stands in water at 105° F. A linen sheet is wrung out with water at 80° F., the temperature being decreased 5° to 10° daily to 50°. This damp sheet is wrapped snugly over the body, and the patient actively rubbed over the sheet until it is warm. He is then dried, dresses, and exercises in the open air. One next proceeds to the drip sheet.

Drip Sheet.—The patient stands in water at 105° F. A linen sheet is dipped in water at 88° F., the tempera-

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ture being reduced daily until 50° is reached. The dripping sheet is wrapped around the patient and friction given and the patient slapped with the flat hands for two minutes. Water at 70° F. is poured over the shoulders, friction being applied again until the sheet is warm. This procedure is repeated rapidly over successive parts of the body, the sheet is then removed, and the patient dries, dresses, and exercises.

All applications of water below 90° F. must be accompanied with friction. Simon Baruch (Medical Record, July 27, 1912).

TYPHOID FEVER, EFFECTS OF PYRAMIDON IN.

The authors report several cases of typhoid fever in which a sudden fall in the temperature took place upon ingestion of small doses of pyramidon,—0.2 and even 0.15 Gm. (3 to 2¼ grains),—together with caffeine. One of these patients, in fact, developed severe vomiting, with considerable rigidity and a temperature of 36.8° C. (98.2° F.), so that it was feared intestinal perforation might have taken place. It is therefore recommended that, if the drug be given at all in typhoid fever, only very small doses, such as 0.05 Gm. (⅚ grain), should be employed. Hirtz and Croissant (Société Médicale des Hôpitaux de Paris; Bulletin médical, July 3, 1912).

TYPHOID FEVER IN INFANCY.

An analysis of 75 cases of typhoid fever occurring within the first two and a half years of life was made by the author. The tongue, although usually coated, is rarely the dry, fissured tongue seen in later life. Decided loss of appetite is uncommon, and vomiting, although comparatively frequent, is seldom severe. Diarrhea is much more common in infancy than in adult life, but is seldom severe enough to demand specific treatment, and abdominal distention is a frequent symptom. Bronchitis is common, but seldom of much importance, and epistaxis is rare. A rapid pulse rate is a frequent symptom in all diseases of infancy and is of importance only in those infants who are severely or fatally ill. The nervous symptoms in infancy show through evidences of excitement rather than depression and are not a prominent feature. The typhoid state of the adult is very exceptional in infancy, and prostration is not great.

The course of the temperature is not characteristic. The initial rise is rapid, and the temperature may be steadily high or moderate, later becoming irregular, or it may be irregular from the beginning. The fall of the temperature is frequently rapid.

The typhoid roseola has a tendency to develop earlier than in adult life, usually from the fourth to the sixth day. The Widal reaction is as characteristic as in adult life, and leucocytosis is usually absent. J. P. Crozer Griffith (Archives of Pediatrics, August, 1912).

TYPHOID FEVER, THERAPEUTIC USE OF VACCINES IN.

It has been shown by Russell that, after the use of typhoid vaccines in the normal individual, there is a period varying from five to eleven days during which there is no production of opsonins and agglutinins; but from that time until about the twenty-fifth day there is a very rapid production of antibodies, so that these are present in great concentration.

The study of a series of cases by the author showed a marked change in the temperature curve corresponding to the beginning rapid production of opsonins and agglutinins in the healthy individual

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following prophylactic inoculation. This change also occurs very frequently in typhoid cases receiving vaccine treatment, and, accompanying but slightly antedating the change in the temperature curve, there is even a more marked change in the clinical picture of the patients. They lose the typhoid facies, appear bright, taking an interest in what is going on about them, sleep better, and the appetite returns sooner than when the vaccine treatment is not used.

The author reports 14 cases of typhoid fever treated with vaccines, with 2 deaths and no relapse. One death was due to ruptured spleen; the other to asthenia. The dosage used was an initial injection of 500,000,000, repeated at four-day intervals as long as required, and increased by 100,000,000 at each subsequent injection. A stock vaccine was employed, as it causes less local reaction and is less toxic than an autogenous vaccine. It is as efficient a producer of bactericidal substances as the more recently isolated strains, and has fewer undesirable side actions.

The vaccines are given in the same way as any hypodermic medication, and the injections made just under the skin over the insertion of the deltoid or over the tensor vaginæ femoris. Any spot may be selected that is rich in connective tissue and not called into too active motion. The local reaction is essentially the same in prophylactic vaccination and therapeutic inoculation, and consists of redness, swelling, and a brawny induration, which passes away in about twenty-four hours. In the therapeutic use of typhoid vaccine the systemic reaction can be ignored.

There has been reported so far a total of 475 cases of typhoid fever treated with vaccines. In this number of cases there have been 31 deaths, or 6.5 per cent., and 31 relapses, or 6.5 per cent. Omitting the 52 cases reported by Sadler, with an absurdly small dosage, there remain 423 cases, with 24 deaths, or 5.4 per cent. The cases come from widely separated sources, treated with a great diversity of dosage of vaccine, and with an equal variety of routine treatment, covering a period of three years. This number of cases with a death rate of 5.4 per cent., when contrasted with the usual death rate in typhoid fever of well above 10 per cent., seems to offer a hope of a great reduction in the mortality when the vaccine treatment shall be more generally used and used earlier in the course of the disease.

Complications are less frequent in vaccine-treated cases, and the original attack seems to be shortened in some instances. To give the best possible results, the treatment should be instituted as early as it is possible to make a diagnosis, before the patient is exhausted and complications intervene. James G. Callison (American Journal of the Medical Sciences, September, 1912).

VINCENT'S ANGINA, TREATMENT OF.

In the mild cases of this affection, those in which the ulcers resemble syphilitic lesions, the writer has derived the best results from the use of trichloracetic acid. The membrane is first removed by peroxide of hydrogen and wiping with a cotton swab, the ulcer is then anesthetized with a 10 per cent. solution of cocaine, and the trichloracetic acid applied a few minutes after. Sometimes one application is sufficient, but usually three or four applications at intervals of two or three days are necessary. In the author's experience tincture of iodine is not as efficacious as trichloracetic acid, but is preferable in those

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cases in which the ulceration is extensive. Pain is relieved by the use of orthoform. The teeth must be cared for; no progress will be made as long as carious teeth and ulceration around them remain. The general condition of the patient must also be improved.

In the most serious cases, local treatment is not satisfactory. It is hoped that a specific antitoxin may yet be produced. Possibly the use of salvarsan will be efficacious against the spirochete causing this condition. Thomas H. Halstead (Lancet-Clinic, October 26, 1912).

VOMITING OF PREGNANCY, TREATMENT OF PERNICIOUS.

The author refers to the fact that, in Blodgett's examination of about 4000 specimens of urine for acetone and diacetic acid, these substances were never found to be present in appreciable amounts (unless sugar was present) without being accompanied by nausea and vomiting or else convulsions. It is not claimed that all cases of pernicious vomiting are due to this form of auto-intoxication. Nevertheless, this condition does cover many cases, and the easy demonstration of acetone and diacetic acid affords on indication of the proper treatment. The author has encountered 34 cases of this type, all of which, as specified by Blodgett, showed a tender spot over the head of the pancreas. All responded promptly to treatment with alkalies.

The treatment recommended is to give sodium bicarbonate, from 5 to 50 grains a day. This may seem impossible when the patient is vomiting every morsel taken into the mouth, and in some cases vomiting when nothing is taken. In very persistent cases 20 grains of sodium bicarbonate may be dissolved in a glass of water and the patient given a sip occasionally. Part of this will be vomited, but some will be retained. Within twenty-four hours the vomiting is lessened, more of the drug is retained, and the patient becomes convalescent. The drug may be given intravenously, if desired. As soon as vomiting ceases, it should be materially reduced, but continued in small amounts for a week longer. The bowels should be well cleared, preferably by colonic flushing kept up until the water returns clear.

The hardest cases to cure seem to be those where persistent vomiting begins at about the second month of pregnancy, while those beginning at the sixth to eighth month are checked very quickly. In a few instances the subjects have had a relapse after varying intervals, but if treatment is begun again promptly with perhaps a 5-grain tablet, dissolved in a glass of water, three times a day, the condition is quickly arrested.

In some cases of persistent vomiting without recognizable cause, and where no acetone or diacetic acid was present in the urine, the author has found very marked improvement to result from the use of veronal. A. V. Lyon (American Journal of Clinical Medicine, September, 1912).

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Book Reviews

DISEASES OF THE STOMACH, INTESTINES, AND PANCREAS. By Robert Coleman Kemp, M.D., Professor of Gastrointestinal Diseases, New York School of Clinical Medicine. Second Edition, Revised and Enlarged. Octavo of 1021 Pages, with 388 Illustrations. Philadelphia and London: W. B. Saunders Company, 1912. Cloth, $6.50, net; Half-morocco, $8.00, net.

The thoroughness of the revision to which this useful work has been subjected and the extent of the additions made may be partially gathered from the fact that the number of pages has risen from 766 to 1021. Several new subjects have been introduced, notably chapters on colon bacillus infection and a 100-page section on diseases of the pancreas. The section on duodenal ulcer has been rewritten, greatly expanded, and brought in conformity with the latest views. The subject of perigastritis and perigastric adhesions is newly considered in this edition. In the article on typhoid fever the subjects of diagnosis and prophylaxis are somewhat more fully considered than before, and in the treatment the possible value of proctoclysis pointed out. The advisability of giving hexamethylenamine and sodium benzoate during convalescence from this disease, and of not discharging the patient until the urine is free from typhoid bacilli, is duly emphasized. In the dietetic management of typhoid fever, the author steers between the exclusive milk *régime* and the heavy milk, cream, bread, butter, and egg diet of Coleman; he gives gruels, broths, yolk of egg, and gelatin to the extent of 2500 calories daily, as well as the juice of several oranges and about 2 quarts of water with dilute sulphuric acid. New sections on paratyphoid fever and Brill's disease have been introduced in the same chapter.

Over 100 new illustrations, all of practical utility, appear in the present edition, which is thus amply provided in this respect. The favorable impression given by this book when it was first issued, two years ago, is emphatically renewed with this edition. The work is up to date, full, and very practical, and therefore cannot fail to be of service to the physician, whether a general practitioner or specialist.

SURGICAL OPERATIONS. A Handbook for Students and Practitioners. By Prof. Friedrich Pels-Leusden, Chief Surgeon to the University Surgical Clinic and Chief of the University Surgical Polyclinic in the Royal Charity Hospital of Berlin. Only Authorized English Translation by Faxton E. Gardner, M.D., New York. Octavo of xxxii + 726 Pages, with 668 Illustrations. New York: Rebman Company, 1912.

In this book the author has brought together in appropriate form the material which has formed the subject of the practical courses and lectures given under his direction and by him in the University of Berlin. Though it is intended particularly for students and general practitioners, the author, at the beginning, modestly expresses the hope that the specialist will find useful things in it, and for this hope an examination of the text at once yields abundant justification.

The first 86 pages of the book are devoted to the methods of securing antisepsis and asepsis, anesthesia,—general and local,—and the reunion of tissues, as by sutures, skin grafting, etc. Interesting in the section on asepsis is the author's reference to the "chirosoter" method of preoperative skin disinfection. After brushing the hands for five minutes with tincture of green soap and alcohol, the author dries them thoroughly and has the chirosoter—containing carbon tetrachloride—sprayed on; this forms a waxy film over the skin, thus preventing infective germs from adhering to the surface. Pels-Leusden believes a trial of this substance in accidental wounds of all kinds would be fully justified; the chirosoter could be applied to the skin in the vicinity of the wound in order to protect the latter from infection.

After the above introductory section the systematic discussion of special operative surgery is taken up. First come the blood-vessels, next the extremities,—amputations and exarticulations, resections, and various other more special forms of intervention,—the head, the neck, the chest, the abdomen, and finally the urinary and genital organs. Abdominal surgery is dealt with very fully. The illustrations are so numerous and well assorted as to afford the reader much help in visualizing the technique described in the text. On the whole, the work is decidedly more than a simple manual. Its completeness is surprising, considering the size of the volume. The wealth of matter presented and the critical manner in which the rival procedures introduced by various operators are discussed will commend the book to all surgeons.

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The General Field

Conducted by A. G. CRANDALL

The Recklessness of Old Age

The press reports of the last few weeks of the life of the late Whitelaw Reid, Ambassador to England, afford but another illustration of the anesthesia which seems to settle upon the mental faculties of many people of advanced age who have always led an active life, rendering them incapable of placing any proper estimate upon their reserve strength and vitality.

The health of Mr. Reid had been seriously undermined for a considerable number of months, but with his natural vigor there is little doubt that, had he possessed a realizing sense of the importance of his taking reasonable care of himself, he might have eventually recovered his normal poise and led a semi-retired life of comfort and satisfaction for a considerable period of time.

There seems to be a certain fatalism to which even the broadest minds are not immune. Notwithstanding his advanced age, Mr. Reid struggled on, subjecting himself to the heavy physical tax to which a public man is always liable. What reserve he had was naturally frittered away and the end of the struggle was inevitable.

Had the patient been a man of ordinary standing, no doubt the physicians would have asserted themselves and laid down the law to such a degree as to change the history of the case. It is reported that Napoleon in a family crisis instructed the more or less overawed physician to forget that royalty was to be considered at all and to treat the case exactly as though the patient belonged to the peasantry. If the man of wealth could receive the same offhand advice from the family doctor which the motorman on the street car would get, the chances for recovery would often be very much improved.

Where Rules of Hygiene Are Lived Up to

In America it is one thing to have a law and another to have it carried out.

From time to time, most of the enlightened cities to be found on the map of the U. S. have, through their accredited representatives, enacted certain regulations calculated to promote the public health. Before the dust of a street is removed, a sprinkling process is supposed to be in order, but very often the street is not sprinkled. Expectoration on the sidewalks is prohibited in most cities, but the police seldom remonstrate with the offenders. Households are supposed to provide against the danger of slippery sidewalks, but many show a lamentable indifference. Numerous other examples might be cited.

In Berlin, under the benevolent despotism of the Kaiser, such ordinances have not only been enacted, but are carried out. It is unlawful for people of musical temperament to inflict their melody on the public who may not be interested; hence the city ordinance which provides that all doors and windows in restaurants or in cafés and other public resorts, as well as in private houses, must be kept closed while music is being produced. Insanity in this country is said to be greatly on the increase, and who can tell how much this increasing need of restraint is due to our unfortunate continuous open season for ragtime music, which greets the ear on every hand.

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One German regulation, however, owing to present prevailing fashions, seems to be unnecessary in this country, viz., that which prohibits the trailing of feminine skirts on the public streets, thus distributing disease germs.

Germany is said to be greatly encumbered in red tape, but in some instances their methods seem to be justified.

The After-Christmas Neurasthenia

The holiday season, with its joys, is very delightful from the standpoint of those on whom responsibility rests lightly. The probabilities are, however, that a million or so busy matrons would be greatly benefited if they could devote two or three weeks of the glad new year to the rest cure.

It takes a very considerable amount of organization for the average family of two adults and three children to pass their Christmas transactions through the acquaintance "clearing house" and feel sure that each one of the five had made an appropriate donation to all of the numerous relatives and admirable acquaintances of their social circle.

In view of the high prices of everything which helps to constitute the family menu, it is a little less than providential that a certain philanthropist, named Woolworth, has provided a great variety of choice and appropriate Christmas gifts to be purchased at 5 or 10 cents each; otherwise, Yuletide would be undoubtedly followed by a long period of privation on the part of a great number of families who must keep up appearances with their Christmas gifts, irrespective of other considerations.

Faith in the Hen's Egg

Philadelphia has recently been the scene of a grand smashing of the Egg Trust to such an extent that it is indeed a poor family that can't have omelet for breakfast. An enormous number of eggs carefully stored where moths could not corrupt or thieves break in have been released and disposed of at bargain prices not only by an enthusiastic Housekeepers' League, but also by a large number of retail storekeepers who satisfied their conscience, if they had any, that the eggs they sold were at least as good as those sold by the League.

The general effect of the movement, of course, has been to bring down the retail price of those products of many industrious hens which have since gone to their reward. There would be little in life worth living for without imagination, and those whose imagination is sufficiently active to enable them to take an optimistic view of the age of "fancy selected eggs" are endowed with a fortunate gift. There is probably no article of diet where ignorance is more greatly to be desired than the average egg as known to commerce. Experts seem to be very much at sea in their views as to how long the egg can remain in cold storage before it becomes unfit for cooking purposes, and when experts disagree it ill becomes the average dealer in hen fruit to be fussy.

Practically speaking, an egg is good until it is bad, and just when the good egg ceases to be entitled to the respect of the poor "consumer" depends to a large extent upon the amount of faith possessed by that individual.

The Billionaire

Some years ago an enterprising theatrical manager offered to theatergoers of numerous cities a farce comedy based upon the conception of the eminent successful man who had become a billionaire. The program was very entertaining and amused a great number of people.

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Recently the real rôle of the billionaire was enacted when a certain rather well-known J. Pierpont Morgan explained to a Congressional Committee his various fields of activity in the financial world. Those who read the press reports of these statements were perhaps interested more than they were amused.

A man well known in the advertising world has for a considerable number of years been distributing a small booklet describing the ill effects of the depressing emotions, particularly envy and general dissatisfaction, with the things that exist. It is quite possible that a considerable number who stop to ponder as to what it really means for one man to have practical control over $25,000,000 as assets may have experienced something different from the sense of easy complacency so essential to physical well-being.

When it is considered that practically no barrier seems to be available to prevent a steadily increasing centralization of this financial power, it is likely to prove disturbing to even the most optimistic.

The Woman's Page

There is little doubt that women have many causes for grievance—conditions which will be rapidly done away with as soon as woman gets the ballot.

When the shackles are finally broken and woman comes into her rightful heritage and can rise in her might and let her voice be heard in the election booth, one of her first efforts should be to abolish the "woman's page" in the average evening newspaper.

Why it is that the eternal feminine, so quick to resent most excellent advice from her brothers and other masculine relatives, and so indifferent in most instances to the advice given her by family relatives, should have so long and meekly submitted to the "woman's page" in the average daily newspaper is difficult of comprehension.

There is, however, one thing to be said in favor of the woman's page,—its language is plain. There is no need of misunderstanding. Its suggestions as to conduct, control of temper, care of teeth, and management of the *fiancé* and husband are sufficiently kindergarten to be readily understood.

Strange as it may seem, many women take the woman's page in all seriousness. They read and ponder deeply, but, as they acquire a grasp on the great problems now confronting the statesmen of this country, a sense of realization will soon come to them of what they have suffered in reading the "woman's page," and they will act and act summarily.

Child Labor

A correspondent of a New York newspaper protests against the tendency to forbid the employment of children in factories until they reach the age of 14 years, claiming that as a result they are allowed to drift around the streets, acquire bad habits, and a distaste for labor of any kind. Incidentally, of course, the letter contains the good old-fashioned argument that practically all the self-made men have been accustomed to severe labor in childhood and that the good old ways are always the best.

It is one thing for a child to be brought up to work in the open air with all the numerous interruptions due to rainy days and wintry weather, and another for a child to be driven under the lash, as it were, in a factory.

There are certain States where the "child-labor" laws are a disgrace to civilization, and the legislatures of these States should be bombarded with pro-

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tests until they have passed the laws which decency and civilization require.

Where there are a group of children working under devastating conditions, which prevail in certain communities, there is usually to be found, as a contributing factor, lazy and often vicious parents. State laws which protect a drunken father in driving his young children to the factory to become bread winners savor altogether too much of Mexico for the supposedly enlightened U. S.

Family Invasions of the Grip

A physician was recently taken with the grip, which gave him the customary jolt. He recovered promptly, but, as might have happened in the most untutored family, his wife and three children, after the usual period of incubation, became ill with the same distemper. Fortunately all recovered, none the worse apparently for their experience.

The question naturally arises why should the grip, which is recognized as a highly contagious disorder, be allowed to affect an entire family instead of being isolated and its spread naturally confined.

From first to last, the constitutional effects of this disorder form a serious menace to the health of the community, the sequelæ at times being serious. The public are gradually being educated to regard measles as an ailment which should be avoided under all possible circumstances, but influenza, which unfortunately does not, like the measles, usually confer immunity to further attacks, is regarded with more or less complacency by all classes of people.

Education as to the systematic isolation of all cases of influenza would result in very great physical and financial benefit to many a community which has the reputation of being fairly well enlightened on most problems of sanitation and hygiene, but which, for some reason, at the present time has not seemed to appreciate the disadvantages of epidemics of the grip.

Racial Incompatibilities

It is a natural evolution that race prejudice in this country should have generally abated. Well-informed people everywhere have long since recognized the natural benefits resulting from the admixture of race inevitable in the building up of the population of a new country. Therefore, considered in the abstract, race prejudice may be to a large extent regarded as a thing of the past.

But there is one marked exception. The greater the knowledge of sociological conditions, the more marked becomes the opposition of all thinking people to any possibility of general intermarriage of the white population with the colored race.

Therefore, when a congressman in Georgia introduced a resolution in the National House of Representatives prohibiting the intermarriage of whites and negroes he was, undoubtedly, acting upon right lines. For some reason, however, his resolution was not regarded with favor by his fellow-members, and did not receive a vote.

The negro has accomplished a great deal in the past decade to entitle him to respect. He has demonstrated a capacity in many instances for systematic industry on his own initiative. This indicates progress, but during the same period of evolution along the right lines it has been shown frequently enough that any intermarriage between the white people and the negroes is demoralizing to both. Therefore, we believe that Mr. Roddenberry, of Georgia, is correct in his view that such unions should be prohibited by a national law.

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Original Articles

SODIUM NITRITE IN ARTERIAL HYPERTENSION.*

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No remedial agent, in my opinion, is specifically curative. All remedies act by assisting nature to accomplish that which she cannot do by the simple use of natural foods. Used in this manner, all medicinal substances, so called, become foods of a higher chemical potentiality than the normal foodstuffs. They all act in one of two ways: First, according to the common law of heat production and its direct or indirect influences upon the nervous system. Second, by their direct mechanical, irritating, or toxic properties, brought to bear upon sluggish or inactive protoplasmic masses,—masses that will not respond to the stimulating and irritating qualities of the ordinary foods. They increase or decrease oxidation reduction, thus rapidly or more slowly displacing inactive and pathological masses of protoplasm, and ultimately producing in these masses that which is new and perfectly histological in its construction, later followed, in turn, by normal and perfect physiological activity. In this manner we can take out, as it were, a liver, or kidney, or any organ in the body and replace it by a new one. This is especially true from a physiological standard.

In attempting to elucidate the therapeutic value of sodium nitrite, or any other drug, the above facts must always be kept fully in mind. We must know the etiological factors that we are trying to remove. We must be fully cognizant of the methods by which the pathological changes are wrought. With these facts at our command we can select our remedial agents with

* Part of a symposium on the Etiology and Treatment of High Blood-pressure, read at the Thirteenth Annual Meeting of the American Therapeutic Society, Montreal, Canada, May 31 and June 1, 1912.

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scientific accuracy, using them to remove etiological factors, to allay symptoms, or to change directly or indirectly the metabolic processes of the body from the abnormal to the normal.

Some remedies act directly, others indirectly. Sodium nitrite should be classed with those that act indirectly, for it in no sense tends to remove directly the causes of hypertension in the vascular system. It in no measure directly arrests the progressive hardening and inelasticity of the vascular walls which is one of the inevitable results of advancing years. It will not, directly, arrest the hyaline transformation and rigidity of the vascular system resulting from syphilis. Nor does it, directly or indirectly, remove the putrefactive fermentations that are so common in the intestinal tract; fermentations which produce a host of toxins; toxins which when introduced into the blood are among the most frequent and positive causative factors for the innumerable cases of hyper- and sub- tension that we are called upon to treat.

It is in the pure hypertensions, before profound pathological changes have taken place in the vascular walls, that sodium nitrite is most valuable. In fact, it is in the management of this class of cases, which is becoming larger and larger day by day in this strenuous age, that we have our largest opportunities to display to the fullest extent the value of scientific medication.

We now know exactly what can be accomplished with sodium nitrite. The exact *modus operandi* by which it produces a dilatation of the overtense vascular system is not quite so clear. Most writers simply state that it acts like all the rest of the nitrites. This, however, gives very little information as to how it acts.

It is quite probable that, in the presence of water and hydrochloric acid in the stomach, sodium nitrite is decomposed, and that its decomposition products, NO_2 and NO, are disengaged in the form of brown vapors, which are irritants and strong oxidizers. This decomposition is known to occur outside the body,[1] and unquestionably does occur in the cavity of the stomach. These vapors ultimately produce an impression upon the centripetal nerve-endings in the mucous membrane of the stomach, which impulse is carried to the vasomotor center, and by the centrifugal nerves conveyed from the center to the vascular walls, thereby causing expansion of the vessels. This effect may be due either to inhibition of the vasoconstrictors or to stimulation of the vasodilators. The slow decomposition of sodium nitrite as compared with amyl nitrite and nitroglycerin makes it far more valuable when a continuous effect is desired.

That sodium nitrite exerts a continuous effect has been determined both experimentally[2] and clinically.

It is well known that nutritive interchange and the absorption of oxygen are dependent upon an automatic expansion and contraction of the ultimate arterioles and a regulation of the flow of blood through the arterial capillaries, in accord with the working and resting periods of the protoplasmic masses. It is also well known that the nutritive interchange occurs only while the blood is passing through the arterial capillaries. It naturally follows, therefore, that if

[1] Richter's "Inorganic Chemistry," 4th American edition, pp. 206, 296.

[2] Archiv f. exper. Pathol. und Pharmakol., xiii, p. 138.

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these capillaries are continuously contracted or expanded nutritive interchange will fall below the normal standard, and that undue contraction is far more damaging than overexpansion. Overcontraction has been known to cut off the nutritive supply to the tissues to such an extent[3] that death has resulted in perfectly healthy subjects in from ten to fourteen days. Necropsies made on these subjects demonstrated that they were normal, save for the undue contraction of the arterial and capillary system. Hence the greater necessity to modify this hypertension from a purely nutritive standpoint; for without a good and well-distributed nutritive supply, pathological conditions cannot be removed nor physiological conditions re-established.

For the above reasons sodium nitrite is of exceedingly great value, before the vascular system has become too profoundly involved to be readily influenced, because of its power to expand the unduly contracted arterioles. It is more valuable than the other nitrites, because its action is slower and more continuous. Its failure to accomplish the result desired is usually due to its employment in unsuitable cases. The dose is from 1 grain up, given at frequent intervals until the arteries soften.

If sodium nitrite is used in the right cases, given continuously and in sufficiently large doses, the effects are all that can be desired. The distressing symptom dyspnea, which is nature's method of indicating tissue starvation, is completely relieved, in a manner which at times is almost magic. Oxidation reduction is greatly augmented, as evidenced by the changes for the better in the catabolic products found in the urine. Thus, by the drug's action we have relieved a most distressing symptom,—we have in so far as the vascular system is concerned augmented oxidation and assimilation. Now, if at the same time, by other measures, the etiological factors are removed, the diet and digestion rendered perfect, the metabolic processes of the body can be, and often are, changed from an absolutely pathological state to one that is perfectly normal. From a purely histological standpoint we may not effect an absolute cure, but from the physiological we can.

If sodium nitrite is used when the contraction of the arterial system occurs in association with an enfeebled cardiac muscle, in which case the apparent hypertension is nature's method of augmenting the volume of blood supplied to the arterial capillaries, its use can only do harm. The same is true of the condition of engorgement of the general venous system in which, by overcontraction or hypertension of the arterial system, nature is trying to lift a greater bulk of blood back from the venous to the arterial arcade than she otherwise could, so that the blood may again be of nutritive value.

In conclusion I may state that, in my opinion, which is based upon years of experience with this drug, sodium nitrite is a very valuable remedy.

It is the misuse of sodium nitrite that has caused so many to doubt its efficacy. If it is used when and where it can assist nature, we have no more certain and reliable remedy in our whole materia medica.

[3] Deutsche militärärztliche Zeitschrift, 1876.

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DISCUSSION.

Dr. Oliver T. Osborne, of New Haven, Conn., said it seemed to him that we should look at the condition as that simply of old age—normal old age, if the individual did not die by accident. What was it, then, which made the symptoms of old age arrive too soon? He was confident that this was due to diminished action on the part of the thyroid. It was interesting to him to note that the only thing which was of service in the presence of the phenomena of advancing age, when the thyroid grew less powerful and the suprarenals became stimulated, was iodine, and therefore he believed that stimulation of the thyroid was one thing that would do good. For this purpose large doses of thyroid were not required. Now, how much could we inhibit the degenerative changes? We had long known that too much meat, caffeine, alcohol, etc., were injurious. If the patient were nervous and subject to psychic disturbances, the great desideratum was rest. It did not matter whether he soaked in a warm bath or was given massage: what he needed was rest. Of the iodides, he preferred sodium iodide. It was less irritating than the potassium salt, and it was difficult to understand why the latter was so persistently adhered to in this country. As to the nitrites, we did get a continuous action from them unless actual Bright's disease were present. There were times when it was not proper to lower the blood-pressure, and therefore we could not make any fixed rules in this regard. Baking had not been mentioned, but he believed it one of the best measures at our command. However, each clinician had his own pet plan the object of which was to lower the blood-pressure.

Dr. R. D. Rudolf, of Toronto, said that, of course, the increased blood-pressure was merely a symptom, not the disease, and in many instances a rise in the pressure was of a compensatory character. As an illustration of this he would mention a case in which, with a blood-pressure of only 130, the patient had edema, an enlarged liver, and a broken-down compensation. Under appropriate treatment with digitalis, while the blood-pressure went up to 260, his liver became reduced to its normal size, compensation was restored, and he felt much better. From cases like this, therefore, we should remember that high blood-pressure was merely a symptom. Personally, he believed that gentle exercise was of material service. Its first effect was to raise the pressure, but afterward there was a gradual fall.

Dr. A. Ernest Gallant, of New York, said there was one remedy for hypertension which had been conspicuously avoided, namely, water. He had not had much experience with the scientific determination of the blood-pressure, but he had found, practically, that when "rest-cure" patients were confined in bed on an exclusive water diet, imbibing a gallon of water per day, and wholly deprived of food for ten days, arterial hypertension diminished, the pulse became slower, and its character markedly improved from day to day.

Dr. Charles E. de M. Sajous, of Philadelphia, said that Dr. Osborne had stated that in old age the adrenals hypersecreted. He thought it preferable to say that they did so only relatively to the (likewise diminished) secretory activity of the thyroid. Not only were both the thyroid and adrenals known to produce less of their secretions in advanced age, but this could be graphically shown by injecting the venous channels with colored wax. The finer radicles or tufts of the latter grew steadily fewer as age advanced, until in old age they became quite comparable to those of an old tree divested of its finer branches and foliage. But it often happened that the functional degeneration of the thyroid was more rapid than that of the adrenals; when such happened to be the case the persistent rise of blood-pressure sometimes witnessed in old age or even past middle life was directly attributable to the adrenals. In reference to Dr. Pottenger's observation of low blood-pressure in certain cases of tuberculosis, Dr. Sajous stated that in this disease the morbid process frequently invaded the adrenals, which were then found to be the seat of one or more areas of cheesy degeneration. The secretory elements of the organs being correspondingly compromised and the volume of their secretion reduced, the blood-pressure was simultaneously lowered.

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In these cases it was his practice to give adrenal and also pituitary body. These agents did not cure, but they helped to sustain tissue oxidation and the contractile efficiency of the cardiovascular system.

Dr. W. A. Campbell, Colorado Springs, Col., said that the profession at sea level or low altitudes had much difficulty in arriving at a definite understanding as to what the standard blood-pressure was for man, owing to the many conditions within and without the body influencing the blood-pressure. The experience of investigators at low altitudes had been duplicated by those at high altitudes, with the additional difficulty of want of stability in residence. In the past we had been told, in turn, that the arterial pressure or tension was raised, that it was diminished, and that it remained unaffected in high altitudes. From thoroughly reliable recent experiments by Drs. Gardner and Hoagland, Prof. Schneider, and Dr. Hedbloom, it was now pretty positively known that at Colorado Springs, with an altitude of 6000 feet, the blood-pressure was 5 mm. lower than at sea level, and on Pike's Peak, altitude 14,147 feet, it was 5 to 7 mm. lower than at Colorado Springs.

Dr. Francis M. Pottenger, of Los Angeles, Cal., said he was glad to learn that the high-altitude men were beginning to recognize that altitude lowered blood-pressure. The best work that had been done along this line showed that this was actually the case; yet, altitude enthusiasts repeatedly asserted that one of the most valuable effects of high altitude was that of raising the blood-pressure.

Dr. Alfred C. Croftan, of Chicago, said that he took issue with Dr. Dawes in regard to the action of small doses of digitalis. It was a well-known fact that small doses of digitalis, that is, a drop or two of a fresh tincture, were capable of reducing the blood-pressure in cases of intestinal self-intoxication. This fact had been first established by Grodel, and through a series of experiments performed by Brandenburg. It had been found that a watery extract of feces injected into a rabbit under certain precautions could produce a rise of blood-pressure. If, now, two rabbits were injected in this way, the one, however, being placed under the influence of small doses of digitalis, then it would be found that a pressor effect was not produced in the digitalis rabbit; showing that the digitalis exercised to some extent a regulatory effect upon the blood-pressure mechanism, rendering the circulatory apparatus less susceptible to the intoxicating effect of the fecal extract.

The speaker claimed never to have seen any marked effects upon blood-pressure from the use of iodides, although the latter were generally advocated in the medical literature. At the International Medical Congress in Wiesbaden, several years ago, this question had been fully discussed. The chief claim for the iodides was that they reduced the friction of the blood, that is, its viscosity. Experimental work, however, performed with accurate methods, negatived this postulate. As far as the use of large quantities of water in the reduction of hypertension was concerned, he expressed himself as very much more in favor of drink restriction, with the accompanying restriction of sodium chloride. Occasionally in cases of profound intoxication it might be precarious to reduce the liquid intake below a certain level, as the possibility of a concentration of toxic body fluids, and hence a greater toxicity of the latter, might be promoted. As a rule, however, the mechanical element of reducing the amount of labor imposed upon an already overtaxed cardiovascular apparatus was the more important factor.

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THE THERAPEUTICS OF SACROILIAC RELAXATION AFTER OPERATION, LABOR, ETC.*

By A. ERNEST GALLANT, M.D.,

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NEW YORK, N. Y.

WHILE surgeons of the nineteenth century were more or less familiar with diseases of the sacroiliac joints, and obstetricians recognized the presence of relaxation of the iliac synchondroses and the pubic symphysis during pregnancy, parturition, and the puerperium, disorder in this locality remained but little sought for until the appearance of the excellent paper of Goldthwaite and Osgood,[1] wherein were detailed the results of a most careful study of the sacroiliac synchondrosis, and the fact demonstrated that this is a true joint, subject to luxation and dislocation, and the source of symptoms variously and improperly designated as lumbago, rheumatism, sciatica, etc., occurring after injury, operation in the lithotomy posture, labor, prolonged confinement in bed, lifting from the floor, etc.

From a remarkable series of experiments on bodies shortly after death, these authors demonstrated that "A great arc of motion exists and the joint (sacroiliac) can be readily dislocated. . . . . Naturally when this dislocation could be so easily performed in the anatomical specimen the same motion could take place in the living subject when the ligaments were not in tone," and be brought about by "the same factors which would cause relaxation or sprain of ligaments in any part of the body."

ETIOLOGICAL CLASSIFICATION.—The causes of sacroiliac disorder have been classified as follows[2]:—

I. *Physiological*:—

(*a*) Pregnancy; (*b*) parturition; (*c*) menstruation; (*d*) general lack of tone.

II. *Traumatic*:—

(*a*) Acute: 1. Direct blow on sacral region.

2. Twisting backward in falling, or sudden twist or wrenching; stumble; sitting on a chair not there.

3. Strains due to lifting heavy objects,—the so-called "stitch in the back"; lithotomy position.

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* Read at the Thirteenth Annual Meeting of the American Therapeutic Society, held in Montreal, Canada, May 31 and June 1, 1912.

1 Boston Med. and Surg. Jour., 1905, clii, 593, and Jour. Amer. Med. Assoc., 1907, xlix, 768.

2 Dunlop: N. Y. Med. Jour., 1906, lxxxiv, 1131-1134.

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(*b*) Chronic: 1. Relaxation of the lumbar curve of the spine, due to long recumbency, *e.g.*, in typhoid, fractures, etc.

2. Body malformations causing prominent, pendulous abdomen: obesity, tumors, enteroptosis.

3. Faulty methods of dress: corsets, shoes.

4. Occupations and attitudes.

III. *Diseases:*—

(*a*) Infectious arthritis.

(*b*) Hypertrophic arthritis (osteoarthritis).

(*c*) Atrophic arthritis (rheumatoid arthritis).

SYMPTOMS.—As has been noted by different observers, there is a great similarity in the symptomatology of this class of cases, though the symptoms vary in degree and constancy.

1. *Backache* involving the sacral and lumbar regions, causing but moderate discomfort in some, lumbago-like stiffness in others, and most intense muscular spasm which causes the patient to scream with every motion.

2. *Pain,* radiating from the gluteals down the thigh to the calf (and consequent disability) may either be present only to a moderate degree, as if due to a so-called "backstrain," or, in others, be of a severe lancinating character which wholly incapacitates the patient.

3. *Occipital headache* is said to be present in some cases, and cured by immobilization.

4. *Disability.*—When the patient is attempting to walk, the back is held rigid, and at a greater or less angle forward; she steps in the most cautious way, with a somewhat waddling gait, as if seeking to avoid any jarring or a misstep.

Bending forward or backward is very greatly limited by lumbar spasm. In lateral bending, motion is limited away from the affected side, and restrained at the point of pain.

In bed the patient finds it very difficult to secure a comfortable position. She cannot lie on the back or affected side, cannot sit up or lie down, without pain; in fact, any motion aggravates her suffering. For some only does the semireclining posture afford any relief, by night or day.

PHYSICAL SIGNS.—*Inspection* of the joint area may show no perceptible deviation from the normal; in other instances there may be (*a*) lateral curvature of the spine, or (*b*) obliteration of the spinal curve; (*c*) the pelvis may be tilted to the same side, the posterior superior spine being elevated; (*d*) the back may be flattened; (*e*) the sacrum may be more prominent.

Diagnostic Palpation and Manipulation.

Patient standing: (*a*) Deep pressure over the joints elicits tenderness or pain.

(*b*) Mobility may be demonstrated:—

1. By anteroposterior pressure with one hand on the symphysis pubis and the other on the joint.

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2. By lateral compression of the iliac crests while actively or passively lifting the leg with the knee bent, causing lumbar pain.

Patient lying face down:—

(*a*) Hyperextension—Lift extended limb: motion limited; sharp, stinging pain in joint.

(*b*) Rotation—Rotate limb: pain in joint with spasm on flexion, abduction, or adduction.

(*c*) Place one finger on the sacrum, another on the posterior superior spine: motion of joint easily felt.

Pelvic palpation in relaxation would show nothing. In dislocation it would be very painful and at times hard to make, though mobility might be determined by grasping the sacrum between the fingers in the vagina and the thumb on the sacrum, and rocking it backward and forward.

When the bone is diseased, swelling and tenderness can be recognized on pelvic palpation.

Reduction and Fixation.—The correction of sacroiliac subluxation, according to Goldthwaite,[3] is performed as follows:—

1. Simple hyperextension of the spine by a firm pillow "under the hollow of the back" may, by raising the lumbar spine, draw the sacrum into place.

2. Place the patient face down, with the thighs and legs resting on one table, the head and shoulders upon another, and the body hanging unsupported between.

3. Suspension or hyperextension of the spine.

4. Replacement under ether.

Meisenbach[4] reduces the dislocation by hyperabduction, hyperextension, and pressure on the sacrum, and recognizes that he has accomplished his object by a snapping which can be heard as the joint slips into place.

Differential Diagnosis.—The most striking diagnostic features are: (*a*) that drugs exert but little effect in allaying the pain and wholly fail to cure the disorder; (*b*) that fixation of the joints in relaxation, and after reduction, when dislocation is present, gives almost immediate relief.

Lumbago.—The pain is limited to the lumbar muscles, and readily responds to drugs, heat, and massage. If not, one must look for evidences of sacroiliac luxation.

Sciatica.—Goldthwaite is inclined to believe that nearly every case of sciatica is due to compression of the nerve cord by the mobile joint, and this we have found to be true in most of our cases.

"*True sacral disease* can be determined by the X-ray, stereoscopic views being the most satisfactory."[5]

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[3] *Loc. cit.*

[4] *Loc. cit.*

[5] Meisenbach: Surg., Gynec., and Obstet., May, 1911.

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In an extremely interesting paper on "An Experimental Study of Certain Phases of Chronic Backache," Reynolds and Lovett[6] come to the conclusion "that static backache is essentially a mechanical disorder; that it is the result of a loss of balance producing local strain on the tissues in the lumbosacral region and elsewhere on the tissues in the posterior musculature. We further believe, and regard it as our most essential point, that, whatever the local mechanism which produces the symptoms may be, such backache is in a large proportion of all cases not a disease in itself (as suggested by such terms as 'hysterical spine,' 'relaxation of the sacroiliac joints,' etc.), but is a mere symptom-complex due to an abnormal attitude induced by peculiarities of the skeleton, lack of proper muscular balance, or abnormal conditions in the abdomen or elsewhere. We believe that in diagnosis the local condition should be regarded as primary only after every cause elsewhere has been excluded."

Pelvic diseases and menstrual disorders must be eliminated or receive appropriate treatment.

When to the more or less physiological relaxation of the synchondroses during menstruation is added dysmenorrhea, menorrhagia, or metrorrhagia due to cervical obstruction[7] the unfortunate patient is often compelled to go to bed for one or more days and helplessly endure.

Shortened, thickened, tense and tender uterosacral ligaments, holding the uterus in fixation, cause sacral pain, referred accurately to the synchondroses, when laughing, sobbing, sneezing, coughing, or on making any expulsive or lifting effort, whereby the uterus is forced downward and drags on the ligaments. Failure to recognize the full significance of this condition—which is very common—is apt to lead to a wrong diagnosis of sacroiliac relaxation or *vice versâ*.

Obscure Conditions.—By those who carefully digest the magnificent work of Goldthwaite and Osgood, Dunlap and Meisenbach, Albee, and others, and practise careful examination, exact differentiation, and appropriate mechanical treatment of sacroiliac relaxation and dislocation, such indefinite appellations as muscular rheumatism, neurasthenic or functional spine, chronic sciatica, and typhoid spine will be relegated to the limbo of medical misnomers.

The following cases are offered as illustrating a few of the varieties of sacroiliac relaxation. Many have been unconsciously cured, as it is my habit to put the kidney corset on all patients after operation, whereby the unrecognized relaxation has been overcome. Plaster strapping, half round the body, after operation no doubt plays an important part, by dragging on the ilia, and drawing the iliosacral joints apart:—

CASE I.—*Antepartum fracture of ossified symphysis pubis and luxation of sacroiliac joints; relieved by strapping; cure by corset.* My attention was actively directed in 1905 to the pelvic joints by the suffering of Mrs. C3, aged 29, who during the last two weeks of pregnancy complained most bitterly of sacral and pubic pain, which prevented her from walking, sitting, or lying with comfort, except in the semireclining position, and was exaggerated by any motion involving a change of posture. The real

[6] Jour. Amer. Med. Assoc., 1910, liv, 1033-43.

[7] Medical Record, April 16, 1910.

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condition was not appreciated until on Jan. 12, 1907, during delivery of the child by high forceps, crepitation was felt to originate from the symphysis pubis, which had evidently ossified and fractured during the last weeks of pregnancy. The same pain in the sacrum and bladder was complained of as before labor, with excruciating paroxysms on motion. The pain was completely relieved by strapping the pelvis very securely with adhesive plaster. Twelve days later she complained of gas-like pain along the right ureter and kidney region, the latter being palpable just below the chondral border, and easily replaceable when the pain ceased. She sat up in a chair the next day, and the joints gave no further trouble until the following March, when she had a fall. She came to see me the latter part of April, having noticed a movable lump on the left side (the left kidney); soreness at the end of the spine when in bed; looseness of the bowels; cramps; cold feet, and loss of weight. The left kidney was swinging, pendulum-like, toward the umbilicus. These symptoms all subsided on wearing a properly fitted corset, which she has used ever since.

As might be expected, in the writer's practice, relaxation of the sacroiliac joints has been most frequently met with in women after operation, and, in keeping with the observation of Goldthwaite, especially after the lithotomy posture and subsequent recumbency on a woven-wire mattress. This can be accounted for from the way the buttocks sink in the middle of the mattress; the sides fold up around the hips, compressing the ilia forward and inward, and stretching the ligaments over the joints. When the patient gets up she complains bitterly of sacral weakness and pain down the hips and calf of one or both sides.

CASE II.—*Sacroiliac relaxation prior to operation; subsequent aggravation; cure by corset.* Mary B114 applied July 18, 1911, for relief from pain in the back, running down the hip, most severe in the "sinews" of the legs, and intermittent. She had first noticed the pain two years before, upon lifting a trunk. She also noticed a movable lump in the left side. On examination the lump proved to be the enlarged, fibroid uterus, extending on the left side up to the umbilicus, and which was believed to cause the pain by pressure on the pelvic nerve trunks.

Operation September 19, 1912. Supravaginal hysterectomy and enucleation of broad ligament cyst on the left; hemorrhoids removed. Left Deaconess Home Oct. 1st.

Oct. 9th, starting out for a walk, she was taken with a sharp pain, the same as that before operation, and had to go home. She could not sit, stand straight, or lie down, except in the semireclining posture. She returned to the Home and a movable kidney was found three inches below the chondral border. The foot of the bed was elevated. Pleurisy on the right side ran a severe course, but subsided on the seventh day, and she returned home on the fourteenth day.

Jan. 15, 1912, the patient came to the office, saying that the old pain had returned and was as bad as before the operation. It prevented her from working. Examination showed sacroiliac relaxation. The pelvis was fixed by plaster strapping and relief was immediately experienced. March 19th, a special corset was put on and she has been working ever since, though there was still some dull aching in the "sinews" when she was seen a month later.

CASE III.—*Bilateral sacroiliac relaxation after operation; cure by corset.* Mrs. M100. Operated in lithotomy posture on Nov. 2, 1912, for cervical obstruction, with dysmenorrhea and backache. Dilatation and suture of a fenestrated drain into the cervix. Dec. 26th, severe backache and metrorrhagia. A Hodge pessary was inserted, but it gave no relief from the pain involving the whole left hip and cramps running down the right leg nearly to the foot. She could not lie on the left side. A pillow under the back gave no relief. Feb. 6th, examination developed pain on hyperextension and

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rotation; pressure over the sacroiliac joints was painful. Most severe pain induced when she tried to touch the floor with the fingers while the knees were held stiff. Bed making caused very intense pain. Plaster strapping gave immediate relief. March 3d, special corset put on. May 10th, she reports that she is very much better, but *cannot get along without the corset.* The left hip still hurts at night only, when the corset is removed. Advised to wear a heavy muslin binder at night.

CASE IV.—*Sacroiliac relaxation while in bed for movable kidney; jaundice; recurrence.* Miss W36 came under my care in July, 1906, with nausea, vomiting, pain in the right loin (Dietl's crises), and deeply stained, yellow skin. Drugs failing to give relief after five days, she was put in bed and the right kidney found prolapsed two inches. The foot of the bed was raised ten inches; the crises ceased and the jaundice rapidly subsided. July 18th, on getting out of bed, she experienced great sacral pain on walking, with dysuria, which was relieved when she was fitted with a specially made corset.

January 28, 1912, the patient wrote: "I have been practically laid up with a bad back for three months. It came very suddenly. Was so stiff I could not comb my hair, or button my shoes, or get up or sit down without making several attempts. The pain was across the lower part of my spine, half-way between my waist line and end of spine. The extreme stiffness and pain lasted about ten days and then I limbered up a bit; but the pain is still there and at times the stiffness returns, but not so bad as at first. I have tried all the lumbago and rheumatism cures I ever heard of, to no avail. Have baked myself for days, and dieted, have not touched coffee, tea, 'booze,' or red meat for weeks, and still have the pain. Have not consulted any 'M.D.' (Patient a doctor's daughter.) I also have a pain up my right side, under my ribs,—sort of a swollen pain, if you know what that kind of a pain feels like. Do you suppose that my kidney has kicked loose again? or has my liver slipped its cog this time? Probably a corset might help. Am getting desperate, dragging around half-dead; can't sleep at night, and am getting so irritable and nervous. I eat nails."

The patient made a corset for herself and has had no trouble from the sacroiliac joints or the movable kidney since. She has regained her health, weight, and better disposition.

Since 1907 we have been consulted by five men suffering from the "sciatic" type of sacroiliac relaxation, one simulating lumbago, the others with pains referred to the joint, the thighs, back and calf muscles. Here is what one wrote of his own experience:—

CASE V.—*Sacroiliac relaxation simulating sciatica, of thirty-three years' duration.* "Feb. 6, 1912. I am 52 years of age and have been a victim of 'sciatica' since I was 19 years old. It developed while I was a student at college and became so troublesome that a year later I consulted one of the leading surgeons in New York City. He concluded there was forming or had formed around the hip-joint some kind of a growth (adhesions) which could be destroyed by violently bending or flexing the joint, and this he did, giving me ether for the operation. The resulting soreness did not wear away for many months and I had no relief from the old trouble. Some five years later I was dosed with medicines for six months under the theory that there was a dryness in the hip-joint, and that it could be relieved by medicines. It was some two years before this dosing that I was cauterized with a hot iron, and afterward took a long course of hot baths and underwent considerable massaging. In my tenth or twelfth 'sciatic' year I began to try stretching the nerve by lying on my back and drawing the legs in straight position over the body and this after many weeks' trial seemed to have some good effect. This nerve has, however, through all these years given me more or less pain, and has kept me constantly aware of the fact that I have at least one sciatic, viz., the left one. It is quite sensitive, and, as a rule, a slight misstep with the left leg will produce a sharp pain lasting for some minutes.

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"The most acute attack that I recall was one lasting five or six weeks in February and March, 1910, when you treated me.

"At times when walking there is a 'crackling' noise in or near the hip-joint. It sounds and feels as though there was an uneven place in the joint, at each step." Signed "W. F."

After exhausting all his former remedies, internal and external, Mr. F. came under my care and I, failing to recognize the true condition, wasted considerable time drugging, rolling the nerve, vibrating, blistering, etc., and finally did what should have been done at first,—encircled the pelvis with plaster straps,—with the result that in a few days he was out. After the plaster worked loose he discarded it, and has had no severe pain since.

The condition in this case may well be contrasted with the acute attack of real sciatica with which my father was for some weeks a sufferer, but which was cured by forcibly rolling the nerve, at its exit from the pelvis, under the thumbs for three *séances*. The trouble has not returned during the past nineteen years.

TREATMENT.—As might be expected, neither drugs, diet, nor local applications will avail in relaxation or dislocation of the sacroiliac synchondroses. Immobilization in the former case, reduction and fixation in the latter, must be instituted.

In relaxation we have always succeeded in securing almost immediate relief by encircling the pelvis on a level with the anterior superior spines with adhesive plaster, the ends being lapped over the sacrum and secured from slipping by a safety pin passed through both layers of plaster. Later this can be replaced by a strong inelastic belt for men or our special corset for women.

While in our hands plaster strapping has proved efficient for temporary immobilization, other clinicians have in some cases deemed it necessary to apply a plaster-of-Paris jacket or steel brace, and follow this up by a belt worn for some months, until the joint is restored to its natural, relative immobility.

While differing from most observers as to cause and effect, Reynolds and Lovett, in the matter of treatment, state that:[8] "A properly fitting corset with a tight pelvic hold not only improves balance, but incidentally serves as a splint and support. Proper corsets, then, accomplish three things in the relief of this condition—1. They tend to correct vicious balance by carrying the center of gravity backward, thus relieving muscular strain. 2. They partially splint the lower back. 3. They furnish an artificial annular ligament to the glutei muscles."

We may add that, as practically all the women we have seen, tortured by this sort of backache, have also suffered from movable kidney and associated visceral ptoses, the corset which we herewith present, specially designed for this purpose, will afford the much-needed support of all the thoracic and abdominal viscera, as well as immobilize the sacroiliac joints.

DISCUSSION.

Dr. J. Madison Taylor, of Philadelphia, remarked that, however important the sacroiliac junctures were in the genesis of backache, there were, underlying this and

[8] *Loc. cit.*

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other conditions, certain factors on which they all depended. The chief of these was posture. Faulty attitudes of body contributed to and aggravated any disturbance at the sacroiliac synchondrosis or relaxation of other skeletal structures. He sketched on the blackboard the normal, and the more frequently met abnormal, attitudes, and referred to the drag on and the physics of the movable organs as factors in back pains. Another factor was afforded in moderate or severe degrees of fibrositis and myositis, occurring not only in the grosser structures, but in the muscular parts of the organs themselves. Backache was also the outcome of loss of elasticity in the supporting structures, and the restoration of elasticity by cultivating mobility was an important means of relief. Artificial supports were of value mainly, as Longstreth had pointed out, to compel the pelvis to resume its normal position. Properly adapted belts would not only do this, but would also regulate splanchnic circulation, thus aiding in the cure of splanchnic neurasthenias. No belt or corset should do too much, or be depended on too long, or the impaired structures would lose tone, become incapable of doing their proper work, and the individual would become chronically inefficient. The corset of Dr. Gallant was an admirable one, although he would criticise the cuirass-like, massive compression it exercised on the structures above the hips. One feature he took issue with, viz.: the garter-supports in front, pulling downward. No abdominal or pelvic support should have any garter pulling down in front, which would negate the required uplift.

Dr. F. E. Stewart, of Germantown, Pa., said that he had met with a case of infectious disease of the sacroiliac joint due to typhoid fever. Some relief had been afforded by plaster casts and corsets, but a cure had not resulted. He asked the author of the paper what experience he had had in treating cases due to infection with his corset.

Dr. Gallant said that, while Dr. Taylor was not so much out of the way in the matter of treatment, in other respects his viewpoint was quite opposite to that of the speaker, and it would occupy entirely too much time to demonstrate the many points in which he differed. The whole question of attitude depended upon the way in which one looked at it. It was a serious thing to say that a corset changed the figure, but he could positively assert that his corset did change the figure. After a woman had been wearing one for some time it became necessary to refit it. The changes effected were mainly abdominal, but every structure in the trunk, including the heart, lungs, and diaphragm, was lifted and held up. The development of this corset had entailed much careful investigation and thought, and he had been working on the matter ever since 1893. Typhoid fever might cause an infection of the sacroiliac joint, setting up a diseased process, just as tuberculosis did, and in such conditions fixation of the joint with a plaster-of-Paris jacket was usually called for. Recently a case had come under his care in which sarcoma of the pelvis had produced a dislocation of the joint. Here he simply relieved the patient, from time to time, by adhesive-plaster strapping, but never expected to effect a cure. In answer to a question by Dr. Babcock as to the relation of the uterosacral to the sacroiliac ligaments, Dr. Gallant said that when the former were shortened, thickened, and stiffened, as the result of previous infection and inflammation, the dragging downward of the uterus, when laughing or sneezing, crying, or by any expulsive effort, would cause pain referred to the sacroiliac joints, not infrequently pointed out as at the sacral dimples. The diagnosis could be easily made by grasping the uterus between the fingers in the vagina and the hand on the fundus, through the abdomen, when any attempt to raise or lower the uterus would put the ligaments on the stretch and elicit the characteristic pain. The treatment of this uterosacral ligament fixation after the method of Brandt, by massage, or by forcible stretching under anesthesia, and the absorption of the thickening of the ligaments by ichthyol tamponade, was one of the most satisfactory of gynecologic procedures.

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THE TREATMENT OF SPONDYLITIS (POTT'S DISEASE) BY BONE GRAFTING (ALBEE'S OPERATION), WITH REPORT OF EIGHT CASES.*

By J. TORRANCE RUGH, M.D.,

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Almost from the time when Percival Pott first described the characteristics of the disease which has since borne his name, the principles of rest and efficient support and fixation have been recognized as essential to its treatment. Many and diverse were the methods used to secure these until they finally culminated in the plaster-of-Paris jacket, as perfected by the elder Sayre, and the steel spinal brace, as devised by Charles Fayette Taylor. Both of these mechanical devices were designed to support the superincumbent weight, afford fixation, and make posterior leverage.

The first of these purposes was essential because of the crushing tendency of the superimposed head, shoulders, and arms upon the carious and softened vertebral bodies, which are the parts very generally affected. The second purpose was of equal importance, in that motion in the diseased area contributed still further to the progress of the destructive process. This factor is now generally recognized as the greatest mechanical one in keeping active the tuberculous process. Once ankylosis has occurred, the disease activity lessens and quickly ceases entirely; a cure is effected, that is, the disease is abolished or rendered inert, though at the expense of the function of the part. This is the great principle upon which Lorenz lays such stress in advocating a method of treatment in all tuberculous joints which will quickly cause ankylosis. While this constitutes a cure, it is a common experience with orthopedic surgeons to accomplish cures with preservation of function; hence, firm fixation is advocated to prevent all motion and function, and therefore to promote subsidence of inflammation and its disabling sequelæ and preserve function if possible.

The third purpose of these appliances was to make posterior leverage, that is, to throw the weight of the upper body upon the posterior and lateral segments of the spine. For practical mechanical purposes, the spine is divided into two portions, each of which supports the weight of the upper body. The bodies form the anterior pillar, and the articular, transverse, and spinous processes, with the laminæ, form the posterior pillar or the "arch." If the bodies are diseased and incapable of supporting weight, this may by posture be transferred to the posterior portion or "arch." Several other minor effects are also accomplished by such devices, but those above mentioned are the chief.

The inability of the physician to influence directly the course of this disease by other means than those afforded by nature is proverbial. We have also been forced to recognize nature as extremely slow in her methods of removing the disease process and accomplishing a cure, even when aided by most efficient mechanical devices. By careful calculation, based upon a large number of

* Read at a meeting of the Philadelphia County Medical Society, Nov. 27, 1912.

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cases, a Continental surgeon estimated the time necessary to a cure of a spine case as from twenty to sixty months. This estimate, however, must refer to children, and even then to uncomplicated cases, as a conservative forecast of the ordinary case in adults, and with abscess formation or other complications in childhood, would be from six years upward. Something, therefore, that would shorten this period of uselessness and economic loss has been the quest of many investigators in recent years. To take five or six years out of a child's life does not seem such a loss or deprivation, but when it involves a wage-earner and makes a dependent out of an independent the need of some method of treatment to obviate this becomes apparent.

This treatment must meet the above-mentioned mechanical requirements, and in an even more efficient manner than the methods heretofore employed have done. The annoyances of braces and casts likewise furnish an incentive to the adoption of a different form of treatment. Braces readily become out of order or break, or require frequent adjustment, or make too great pressure on bony prominences; and casts are too heavy or too hot, or become soiled and require frequent changing. If, however, the brace can be put under the skin and can become a part of the living structures, a nearly ideal condition will have been accomplished.

In 1891, B. E. Hadra, of Galveston, Tex., read a paper before the American Orthopedic Association at its meeting in Washington, D. C., in which he suggested that the spine be bared by incision and the spinous processes of the diseased vertebræ be anchored to the adjacent ones and to each other by silver wire laced back and forth through the interspinous ligaments. He had performed a similar operation for a fractured spine with success and believed that the same mechanical features were present in Pott's disease. His suggestion met with skepticism on the part of the members of the association and was passed by as not feasible. His presentation of the subject is extremely clear and concise and indicates his firm belief in its efficiency.

In 1895, Chipault, of France, reported his success in amalgamating the posterior arches by wiring together the adjacent laminæ and spinous processes. He relied upon the irritating action of the wire as it cut through the bony parts to stimulate the growth of new bone and to secure amalgamation of these parts. Chipault employed this treatment after gradual, forcible pressure had been used to correct the deformity.

Calot, in 1896, endorsed Hadra's suggestion of wiring as to its efficiency and recommended its use after forcible rapid correction by a method elaborated by himself and widely tried out, but which was employed for a short time only, because of its high mortality and attendant dangers. Calot also operated by removing the spinous process of the diseased vertebra, asserting that cicatricial contraction of the perispinal tissues and bony fusion with the spines and laminæ of the adjacent vertebræ would result (Keetley). He reported 10 cases in which he had freshened the edges of adjacent laminæ and, after approximating them, united the portions of periosteum and bone together.

In 1902, Lange,[1] of Munich, tried the implantation of steel wires on each

[1] Amer. Jour. of Orthop. Surg., Nov., 1910.

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side of the spinous processes, and with apparent success until the effects of flexion and movements caused the ends of the wires to cut through the skin and they had to be removed. In 1908, he again took up the work, using steel wires plated with tin and having the ends protected with rounded knobs. These were sutured to the spinous processes with paraffin-silk. The first case was in a boy of about 12 years, and after two years the wires were still in place, and the patient had been without external support for a year and could work in his father's blacksmith shop. The same difficulty was present in this method of treatment as in the use of silver wire, viz.: that it was a foreign body and could never become a part of the tissues in which it was imbedded.

The next in the field were Hibbs and Albee, of New York. Hibbs[2] published 3 cases in which he had secured fusion of the posterior segments of the spine by carefully dissecting off the periosteum from the spinous processes and laminæ, then partially cutting through the base of the spinous processes and breaking them down to form a continuous bridge between the vertebræ, and finally covering them in completely with the periosteum which was dissected off. He also secures fusion of the laminæ by turning down a small piece from one to the other. Rest in bed with a brace applied is absolute for eight weeks. Then the patient is allowed to sit up and in twelve weeks permitted to walk. The brace is gradually removed after the fourth month. Radiographs show the deposit of a layer of bone over the entire area operated upon, and the results to date give promise of being all that could be desired. This operation can be performed whatever degree of deformity is present, and it lessens very materially the size of the boss. The operation is a further development and refinement of the Chipault and Calot operations, and is one which will commend itself in a large series of cases. It is not difficult of performance and confines all operative work to the one portion of the body.

Simultaneously with the publication of Hibbs's work, Albee,[3] of New York, presented a report of 4 cases of osteoplasty in Pott's disease. His first procedure was to split the spinous processes, either vertically or horizontally, and, after breaking down one-half, use it to bridge over the space between the remaining halves of the spines and secure a continuous bone fusion. The uncertainty, however, of securing solid juncture of these parts in children, where there is so much cartilaginous tissue, and in the face of the necessary movements of the spinal segments during respiration, led Albee to turn to bone grafting to secure fixation. In the New York Med. Jour., March 9, 1912, he published the method and results of grafting a piece from the tibia to the spinous processes in 16 cases, and to the present time (Nov. 27, 1912) he has operated about 80 cases.

The technique is as follows: The patient lies prone, with the head and shoulders partially raised. An incision is made to the side of the tips of the spines for the desired distance, which includes one or two spines above and below the area of disease. The spines are uncovered, the skin retracted, and a thin piece, of as many spines as necessary, is then split with a saw or chisel

[2] N. Y. Med. Jour., May 27, 1911.

[3] Amer. Orthop. Assoc., May 15, 1911.

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from the same side, extending to the depth of about three-fourths inch. It does not invade the spinal canal. The interspinous ligaments are then split between the spines, making a continuous wedge-shaped cut through bone and ligament. This is deepened as desired, and the thin slice is broken aside to open the incision widely. The length of the incision is then recorded with a probe or wire. Next, the leg is flexed upon the thigh. An incision is made lengthwise on the front plate of the tibia, and the fascia and connective tissue are carefully cleaned from the periosteum in front and on the outer side. The length of the graft is then measured off with the wire, and with a Gigli saw or chisel and mallet the graft is removed. This should be wedge-shaped, about one-third inch thick at the base and tapering to an edge, and should contain the periosteum on one side and medullary tissue on the other. It is then fitted into the incision along the spine, portions being cut out if necessary to secure firm and smooth apposition. The two sides of the cut are then sewn over the top of the graft with kangaroo tendon and the wound closed. The tibial incision is closed by an assistant while the operator is working on the spine.

Albee next places his patients upon a flat Bradford frame for a period of from six to twelve weeks, and then permits them to get up gradually and walk about. He has seldom found it necessary to apply any form of brace, though in a few cases some light support was used when the patient was getting about. He has also observed marked retrogression of the deformity in a number of cases after they had been stretched on their back in the above position, and, of course, this correction will be maintained as soon as the graft has become firmly attached to the spines.

I confess to fear of the strain upon the graft after such a short while, and have kept on a plaster jacket for five months at least and then applied a Taylor brace, which I shall keep on for five or six months longer.

This operation is simple and easily performed. The graft has apparently grown solidly in place in all of Albee's cases, and my own results have been uniformly successful to date. Since June 18, 1912, I have operated upon 7 cases at the Methodist Hospital, and assisted John J. Gilbride with 1 at the Medico-Chirurgical Hospital. The respective ages of the cases were 18, 23, 24, 27, 29, 34, 37, and 54 years. The first case, done on June 18, is now wearing a light brace and is ready to do light work whenever he elects. He complains of some pain in his leg if he does a great deal of walking, but the space where the graft was removed appears to be well filled in with new bone and the pain is constantly lessening. The convalescence of every case has been almost entirely uneventful, several having suffered a great deal of abdominal and leg pain before operation, but none since. One case became involved in an altercation with another patient about four weeks after operation and jumped out of bed to get something to throw. He must have come down rather heavily on the operated leg, for he dropped to the floor and complained bitterly of the pain in the middle of the robbed tibia. Little attention was paid to it for several days, but, pain continuing, an examination was made and a radiograph taken, and the tibia was found to have been fractured transversely about its middle. There was no displacement, the fracture being incomplete, or of the

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"green-stick" variety. A plaster splint was applied and recovery is progressing satisfactorily. In another case, 54 years of age, the diagnosis of Pott's disease had been made eight months previously and a brace was worn with considerable benefit, but not entire relief. At operation the condition was found to be one of osteitis deformans, with a certain degree of osteoporosis, and the spine was the only part involved in pain and deformity. The operation was completed, however, and at present its results are as satisfactory as in any of the other cases. If the final outcome proves in harmony with the progress of the case, it will open still wider the field of usefulness of this almost ideal operation. We have had no infection in any case, and the patients have all gained in weight since the operation.

One word of warning to the general profession in regard to this operation is necessary. The thought is more or less prevalent in the minds of many physicians that these operations are curative in themselves;—but such is not the case. The diseased area is not touched in any way, and the purpose of the operation, as first stated, is purely mechanical. The bone graft fixes the spine, puts the brace along the spine as no cast or jacket can possibly do, and, when the spine is fixed, nature heals in the diseased area, and not only eradicates the disease, but solidifies the part, so that later it becomes strong and thoroughly capable of weight-bearing.

The one point which stands in the way of designating this as an "ideal operation" is that it cannot be used in cases where the knuckle is a prominent one. The graft in such cases is not of sufficient width to permit that, when it is cut out to fit the curve in the spine, it will be thick enough at the point of greatest curvature to give the desired strength and support. When, however, the case is secured before the deformity is marked, no matter what the stage in the development of the disease, the grafting is mechanically and surgically the most promising treatment for these affections that has been brought forward. In Albee's[4] latest report, he has succeeded in bending the graft to a certain extent to fit the convexity of the spine. In another case he has made several saw cuts of varying depth on the thin edge of the graft and then bent it easily into position, with results the same as in the other cases. These details enlarge the field of usefulness of this operation.

Some maintain that these grafts are absorbed, and that after a couple of years failure will ensue, but all objections are merely surmises, and we know that at the present time solid union can be demonstrated in these cases four to six months after operation. Further, Albee has shown cases after one and a half years which but confirm his earlier reports of rapid results. Microscopic examination of specimens from dogs shows absolute bony union, with active life on the part of the graft and no evidence of any dead bone-cells in any portion of it. This refutes the idea that the graft dies and is absorbed after forming a bridge on which the new bone structures are built up.

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4 Post-Graduate, Nov., 1912, vol. xxvii, No. 11.

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MODERN METHODS OF DRUG STANDARDIZATION.*

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WITH THE COLLABORATION OF
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(*Continued from the January issue.*)

Standardization of Ergot.

Three principal methods are available for the physiologic standardization of ergot:—

1. The Blood-pressure Method.
2. The Cock's-comb Method.
3. The Uterine Method.

These methods are not new, but merely quantitative applications of methods used for the purpose of studying the physiologic action of the drug.

1. Blood-pressure Method.—This is perhaps the most convenient and generally serviceable test. The technique involved is comparatively easy and, unlike other methods, the effects may be graphically portrayed and accurately measured,—thus giving a *definite quantitative standard.* This is a great advantage over the other methods, as *the assay does not require nor depend upon the keeping of a standard preparation which may deteriorate.*

Apparatus Necessary for Experiment; Animals; Preparation of Experiment.—Same as required for the standardization of epinephrin.

Preparation of Solutions.—All preparations to be tested should be carefully diluted until 1 c.c. of the dilution represents 1 Gm. of drug.

Method of Injecting.—Same as that given under Epinephrin Standardization.

Actual Standardization.—The blood-pressure tracing is started on a slowly revolving drum. After obtaining a tracing of normal pressure about 3 in. in length, the drum is stopped. An injection of 0.04 c.c. (Gm. of drug) per kilo of the preparation to be tested is then given and the blood-pressure observed for ten or fifteen minutes. In most cases the injection is followed by a rapid primary fall of pressure, succeeded by an almost equally rapid rise to normal or above,—according to the strength of the preparation. In order to facilitate the measuring of the myograms, the drum is made to revolve a short distance as follows:—

1. When the point is reached where the blood-pressure is about to rise after its primary fall.

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* Read at the Thirteenth Annual Meeting of the American Therapeutic Society, held in Montreal, May 31 and June 1, 1912.

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2. Five minutes after the injection.
3. Ten minutes after the injection.
4. Fifteen minutes after the injection.

Myograms Showing Effect of Ergot on the Blood-pressure.—If the first injection causes a fall of pressure of more than 35 mm., or a rise of more than 48 mm., the dose should be reduced to 0.02 c.c. per kilo. If the fall is less than 24 mm. and the rise less than 24 mm. the dose should be doubled; otherwise, the same dose is repeated.

Three to four injections are given to one animal, allowing from sixty to ninety minutes to elapse between injections in order to allow the effects of the previous injection to pass off.

Fig. 7.—Complete Tracing.

Use of Several Animals.—Three or four injections of the same preparation should be made into each of three or more dogs and the average rise of pressure taken as the figure of potency.

Fig. 8.—Abbreviated Tracing.

In order to express the activity of the preparation in percentages it is necessary to adopt some provisional standard with which to compare the unknown preparation. After much experience we have adopted the following standard for our laboratory:—

"0.08 c.c. of the fluidextract per kilo should cause a rise of blood-pressure of 30 mm."

An objection to this method is that mongrel dogs, such as run at large in the city, differ considerably in their reaction, but, by using at least three dogs for each preparation of ergot, this source of error is considerably reduced.

2. THE COCK'S-COMB METHOD.—This method was formerly regarded as very unreliable because of the difference in susceptibility of various cocks.

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Some years ago Edmunds was unfavorably impressed with this method and discarded it, but after more extensive experience he stated, in a paper with Hale,[3] that accurate results may be obtained by this method if only white Leghorn cocks are used, since the common barnyard fowl varies too greatly in its reaction.

Select healthy white Leghorn roosters of as nearly the same size and age as possible. (Those weighing from 1200 to 1600 Gm. are best.), By means of an accurately graduated hypodermic syringe, inject into the breast-muscles of one cock a dose of a standard preparation. Inject another with the same dose of the unknown preparation, and, one hour after the injections have been given, compare the color of the two combs, as the maximum cyanosis seems to be reached in about that time. The color begins to fade soon after, so that at the end of two hours or more, depending on the amount of drug given, the comb will usually appear to be nearly normal. Judging from the results obtained from the first two injections, the dose *of the unknown preparation* is increased or diminished until that amount is found which will give approximately the same intensity of action as was shown by the color of the comb of the rooster injected with the standard. The same roosters may be used for several tests, but the injections should be made at intervals of two or three days, so as to allow sufficient time for complete recovery from the effects of previous administrations of the drug. It should not be considered sufficiently accurate if the first injections of the standard and of the unknown preparations produce the same degree of activity, because it is believed that individual variation in different birds might be sufficiently great to interfere. In order to reduce this variation to a minimum, the order of injection on the succeeding day should be reversed until each preparation has been given to each of several birds in turn and the results then based on the average of the several injections. The final comparisons demand careful selection of the birds to be injected. A choice of two birds is advisable which are of about the same size and have previously reacted well to the drug. With a little practice it is easy to compare the intensity of the discoloration in the two cocks' combs and so to regulate the dose of the drug given as to produce approximately the same degree of reaction. The doses thus obtained will give the relative strength of the two drugs.

Variations may further be avoided by using only such roosters as react alike to a standard preparation, and also by constantly changing the order of injections so that the same cock shall not receive the same specimen of the drug twice in succession. Although the relative strength of two preparations may be thus determined quite accurately by this method, it is not well adapted for standardization work because it requires that a standard preparation shall be kept on hand. This makes the standard dependent upon the keeping qualities of a stock galenical. Any deterioration, therefore, will result in a lowering of the standard for all subsequent preparations. Owing to the rapid

[3] Edmunds and Hale, Bull. No. 76, Hyg. Lab. U. S. Pub. Health and Mar. Hosp. Serv.

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deterioration in preparations of ergot,[4] it is, therefore, practically impossible to keep on hand a preparation of standard strength and it is believed that more satisfactory results may be obtained by the blood-pressure method because the blood-pressure may be accurately measured by the manometer and kymograph, and permanently recorded.

3. UTERINE METHOD.—*Apparatus Necessary for Experiment.*—Myocardiograph, Harvard light muscle lever, counterbalance weights, surgical instruments, cannulæ, tank for saline bath, all-glass syringe, and an apparatus arranged for maintaining artificial respiration.

Animals.—Various animals may be employed, including the dog, cat, and rabbit, but cats of medium size give the best results.

Preparation of Experiment.[5]—When the intact animal is to be used it is anesthetized with acetone-chloroform (0.3 to 0.4 Gm. per kilo of body weight) given in solution by means of a stomach-tube. A cannula is then placed in the external jugular vein for the injection of the drugs, and a tracheal cannula is inserted to allow artificial respiration, which is kept up during the entire experiment. The animal is then submerged in a 0.9 per cent. saline bath maintained at the constant temperature of 39° C. The further operative process of exposing the uterus is then carried out by an incision along the linea alba from the ensiform cartilage to the symphysis pubis and the two halves of the abdominal wall drawn apart and secured by means of hooks. The bladder and intestines are drawn aside and secured underneath the salt solution to prevent any irritation by exposure to the air and drying. One horn of the exposed uterus is then freed as much as possible from its attachment to the posterior wall of the body cavity by tearing away the peritoneal attachments. Especially is it advantageous in securing a uterus with the utmost freedom of movements to detach the ovary by tearing it free from the ligaments binding it to the posterior wall, although care must be used not to injure the blood-supply in these manipulations.

For the purpose of attaching the uterus to the recording apparatus two silk threads are passed, using a fine round needle, through the uterine horn at a distance of about 2 cm. apart. These are attached to the levers of an ordinary myocardiograph.

For recording the movements a light lever is attached to the myocardiograph, and, as the matter of tension is of great importance, a Harvard light muscle lever is made use of on account of its extreme lightness. Since it has been noted that some uteri will react under considerably more tension than others, the amount of tension is varied by the use of counterbalancing weights until a satisfactory result is secured. These conditions are only attained as a result of experiment with each individual organ, and it is frequently necessary to make a number of injections of ergot, using different degrees of tension on the uterus before the best conditions for comparative tests are obtained.

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[4] Recent investigations by Pittenger and Vanderkleed, soon to be published, indicate that ergot fluidextracts may be kept *in vacuo* without deterioration. This fact will result in making it possible to preserve standards with which to compare new lots of drug and their preparations.

[5] Edmunds and Hale: *Loc. cit.*, pp. 28-29.

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Preparation of Solutions.—All preparations to be tested should be freed from the greater part of alcohol by evaporation on a water bath and made up to fluidextract strength with normal saline solution.

Method of Injecting.—Same as under Epinephrin Standardization.

Actual Standardization.—"When the mechanical requirements for the experiments are fulfilled the specimens of ergot are injected. More satisfactory results are secured by comparing only two preparations, the unknown and the standard, at a time, injecting them alternately at intervals of not less than five or, perhaps better, ten minutes, and increasing or diminishing the doses until such amounts of the preparation are found which will produce contractions of equal intensity. It is by no means easy to accomplish this, and frequently it calls for the exercise of considerable patience, as, for example, it is not an unusual experience to carry on such an experiment for two or three hours and, on account of the irritability of the uterus as shown by spontaneous contractions, to know very little more about the relative strengths of the two specimens at the end than at the beginning of the experiment.

"In a favorable experiment, for example, one being carried out on the uterus of a virgin cat, there are no spontaneous contractions, and after each injection the uterus responds by a single contraction. In such an experiment it is often possible to get very definite results in a short time, the results from one pair of injections being verified by further injections until there can be no doubt in the mind of the operator as to the relative activity of the two preparations. No standard of comparison can be given, however, which will fit all animals—in the one case the relative strengths of the contraction as outlined above may be taken, while in the second it may be necessary to adopt as an end-reaction the smallest amount of each drug which will produce a contraction, while in a third uterus, which may be irritable and show spontaneous movements, it may be necessary to employ as a standard the smallest amount which will clearly influence these movements, as, for example, by a delay in the relaxation. Thus it will be seen that each animal appears to be a law unto itself, so far as tension is concerned, and also as to the character of the uterine movements, and that the standard which is to be used in comparing specimens of ergot must be a variable one on that account."

Cannabis Indica.

This assay depends upon the characteristic action of the drug upon the central nervous system, in which changes are induced causing a peculiar train of symptoms. These are divided into three typical stages: (1) one of excitability; (2) one of inco-ordination; (3) one of lassitude and sleep.

Shortly after receiving a dose of suitable size of cannabis indica the animal generally vomits and then becomes excitable. In from one to two hours incoordination follows; the dog loses control of its legs and of the muscles supporting the head, so that, when standing, the feet are usually spread apart to maintain balance. When nothing occurs to attract attention the head droops and body sways from side to side or anteroposteriorly. A distinct ataxia is present in walking, and, when severely affected, the animal will stagger and

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fall. If, however, it is spoken to sharply or attention is drawn to anything of interest it may momentarily recover and the typical effects of the drug disappear, but in a few minutes it again relapses into the former condition. As the action of the drug progresses the muscular inco-ordination becomes greater and the animal passes into the third stage; the depression and lassitude are increased until finally the animal sinks to the floor as if exhausted and passes into deep, undisturbed sleep. After several hours the effects of the drug slowly disappear and the normal condition returns.

For standardization purposes the end-reaction to be observed is one just sufficient to produce muscular inco-ordination in a dog.

Animals.—Short-haired dogs of medium size (6 to 12 kilos) are well adapted for this work. They show the different stages of the drug's action because of their comparatively high brain development.

Animals for assay purposes should be selected with great care, it being necessary to pick out those that are healthy, intelligent, quiet, and which have shown by previous tests that they are easily affected by the drug.

After several dogs have been selected, the operator, before using them for actual work, should study each animal in order to familiarize himself with the behavior, peculiarities, etc., of the dog under normal conditions. The same animal may be used many times, provided that twenty-four to thirty-six hours are allowed to elapse between doses in order that the animal may *completely* recover from the effects of the previous dose.

Although the animals never appear to lose their susceptibility, it is not advisable to use a dog for more than six months, and care should be taken to allow one week to elapse between assays.

Preparation of Experiment.—Select and weigh several animals which have been found easily susceptible to the action of cannabis, and withhold all food for at least twelve hours previous to the time of administration of the drug. Water should be allowed.

Preparation of Drug for Administration.—Tinctures and solid, powdered, and fluid extracts are weighed or measured directly into hard gelatin capsules. When a crude drug is to be tested a representative sample should be finely ground and then made into a fluidextract.

Method of Administering.—The drug is administered internally by means of a small capsule. The animal's mouth is opened by forcing the thumb and index finger of the left hand between the jaws, back of the teeth. The capsule is then placed on the back of the tongue with the right hand and the mouth quickly closed; while still holding the mouth shut, the animal can be made to swallow the capsule immediately by slapping it on the throat.

Actual Standardization.—Administer to a series of three selected dogs $^{9}/_{10}$, $^{10}/_{10}$, and $^{11}/_{10}$ of the standard dose of the preparation to be tested, for each kilo body weight of animal. Then place the animals in a room where they will be undisturbed and are remote from noise and excitement; careful observations should be made and the results recorded during four or five hours.

If this preliminary test shows that the drug is either above or below standard strength, other dogs are given progressively increasing or decreasing doses,

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as the case may be, until the smallest dose per kilo body weight is found which will produce an action just sufficiently pronounced to bring on the stage of inco-ordination. This is distinguished by a slight ataxia when walking and a drooping of the head and gentle swaying of the body while at rest. The relative strength of the preparation tested is then computed between the "minimum dose" and the "standard minimum dose" by simple proportion.

The personal equation plays an important part in this assay, since the accuracy of the test depends largely upon the experience of the operator and his ability in determining just when the effects of the drug manifest themselves. In the hands of an experienced operator, therefore, results may be obtained which will show, with fair accuracy, the relative value of any preparation of cannabis sativa.

(To be concluded in the March issue.)

PHYSICAL ECONOMICS—WITH REFERENCE TO THE ECONOMIC VALUE OF MAN AND THE MEASUREMENT OF DAMAGES TO ANY PART OR PARTS OF HIS BODY, BY STANDARDS OF MEASUREMENTS AND MATHEMATICAL FORMULAS, IN A MANNER EQUITABLE TO ALL CONCERNED.*

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(Concluded from the January issue.)

By examining Table 7, Standard of Measurement for the Loss of Hearing, it will be observed that it corresponds to Table 6, Standard of Measurement for the Loss of Sight, and also to Table 8, Standard of Measurement for the Loss of Smell, for the Loss of Taste, and for the Loss of Feeling.

With the formulas and tables herewith given, we have a scientific and practical method for determining the economic value of man and the measurement of damages to any part, or parts, of his body, from injury or disease, in a manner equitable to all concerned.

It will be noticed in tables from 1 to 4 that T, the technical ability of the mathematical formula for the normal earning ability of the body, is omitted, because T, the technical ability, is not injured, but limited in proportion to the damages to F, the functional ability of the body, whose impairment includes these damages. T, the technical ability, after it becomes fixed in life, remains one, and for this reason also may be discarded, because multiplying any quantity by one does not change its value.

We thus have the mathematical process of the formula to correspond to the simple terms in arithmetic, namely, F, the functional ability of the person, corresponds to the multiplicand, and C, the competing ability of the person,

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*Read before the American Otological Society, at Atlantic City, N. J., June 11, 1912.

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corresponds to the multiplier, while E, the earning ability of the person, corresponds to the product.

The axiom in arithmetic is that increasing the multiplier increases the product, and diminishing the multiplier diminishes the product; that when the divisor is less than one the quotient will be greater than the dividend, and that the reverse of a number is one divided by that number.

In Table 1, the coefficient of C, the competing ability, has been increased (by evolution) to have E, the earning ability, increased whenever it is determined, in a given case of injury, that C, the competing ability, has been damaged to a lesser degree than F, the functional ability.

In Table 2, the coefficient of C, the competing ability, has been diminished (by involution) to have E, the earning ability, decreased whenever it is determined, in a given case of injury, that C, the competing ability, has been damaged to a greater degree than F, the functional ability.

Table 1 represents the reverse process of Table 2, and may be readily understood by the following illustrations: If we produce involution of 1/2 to the 6th power we express it thus, $1/2^6$, and it equals $1/2 \times 1/2 \times 1/2 \times 1/2 \times 1/2 \times 1/2 = 1/64$, reduced to a decimal $= 0.015625$. In this example 1/2 is the multiplicand and 1/2 is the multiplier. The product is just as much less than the multiplicand as the multiplier is less than one, namely, it is one-half of it every time it is multiplied. This is the reason why raising a fraction by involution to any given power diminishes its value. This is what is done in Table 2 to C, the competing ability, in order to have the damage to E, the earning ability, diminished to correspond to the condition of greater damage to C than to F, the functional ability.

In Table 1, the reverse of involution is produced, namely, evolution, and is indicated by the reverse of the number, or one divided by the number, for the index of the exponent, or the root to be sought; thus, $1/64^{1/6}$ or $0.015625^{1/6} = 1/2$, or 0.5. If we did not want to increase the value of the fraction to so high a degree we would practise evolution a less number of times, as indicated by a smaller number for the denominator of the fractional exponent, or the root to be sought; thus, $1/64^{1/3}$, or $0.015625^{1/3} = 1/4$, or 0.25.

$1/64^{1/2}$, or $0.015625^{1/2} = 1/8$, or 0.125.

This is what is done in Table 1 to C, the competing ability, in order to have the damage to E, the earning ability, increased to correspond to the condition of lesser degree of damage to C than to F, the functional ability. We have gone into this explanation of the formation of Table 1, and Table 2, in order to answer questions that have been asked so many times about them.

In normal conditions the coefficient of F, the functional ability, is one, and, as C, the competing ability of a person, is composed of the same elements, its coefficient is one also; hence E, the earning ability, would be one. When a person has sustained damages to his body, the coefficient of F, and of C, becomes less than one, according to the amount of damage sustained. We then have to consider first, whether the damage to F, the functional ability, causes the same degree of damage to C, the competing ability, or second, whether it causes a

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less degree of damage to C, or third, whether it causes a greater degree of damage to C, than to F, in the vocation of the person.

The treatment of these conditions in the tables is as follows: First, when it is determined that the damage to F, the functional ability, causes the same degree of damage to C, the competing ability, in the vocation followed by the person, then E, the earning ability, will be the product of these coefficients. (Table 1, Col. 3.)

Second, when it is determined that the damage to F, the functional ability, causes a lesser degree of damage to C, the competing ability, in the vocation followed by the person, then its coefficient must be increased by evolution before it is multiplied by the coefficient of F (Table 1, Col. 4, 5, 6, 7, 8, and 9) in order to have E, the earning ability, increased to correspond to the lesser degree of damage to C, the competing ability.

Third, when it is determined that the damage to F, the functional ability, causes a greater degree of damage to C, the competing ability, in the vocation followed by the person, then its coefficient must be diminished by involution (Table 2, Col. 2, 3, 4, 5, 6, 7, 8, 9, and 10) in order to have E, the earning ability, diminished to correspond to the greater degree of damage to C, the competing ability.

In Table 1, E, the earning ability, after damage to F, the functional ability, from 0.01 to 0.80 is given with C, the competing ability, damaged to the same degree as F, and with C damaged to the tenth degree less than F, and in Table 2, with C damaged to the tenth degree more than F, thus giving sixteen different degrees of damage to C, the competing ability, in the two tables. Table 3 and Table 4 are complementary tables to Table 1 and Table 2, giving the loss on one thousand dollars of the economic value of the person for each of these computations. Thus, all the computations are made in an accessible form in these tables and will facilitate the work of solving the problem of determining damages to the body from injury or disease. Table 5 explains itself. It may be used as a standard for comparison in damages for other injuries.

We will now give examples illustrating how readily damages to any part, or parts, of the body may be determined by one uniform method by the use of the formulas and the tables.

We will determine the damages (1) to a person 43 years old, who is a clerk in a department store, for the total loss of hearing in one ear. He is earning two dollars a day and therefore his gross economic value is, in round numbers, $10,000. (No. 9, Evom Table, Col. 2.) The damage to F, the functional ability of the body, according to Table 7, Col. 5, is 0.12. Subtracting this from 1, we have 0.88 for the coefficient of F and C, which, introduced into the formula for the normal earning ability of the body, gives: (5) $0.88\ F \times 0.88\ C = E$. If we determine that C, the competing ability of this person, is damaged to the sixth degree less than F, the functional ability, we have: (6) $0.88\ F \times 0.88\ C^{1/7} = E$, and we find the value of E, the earning ability, to be 0.8641 (Table 1, Col. 8). If this is the remaining earning ability, we find the loss by subtracting it from 1, and we have 0.1359, the loss on one dollar, or

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$135.90, the loss on $1000 (Table 3, Col. 7). As we have just shown that his economic value was $10,000, his economic loss would be ten times $135.90, or $1359, for the total loss of hearing in one ear. If we add to this the loss in time and expenses incident to the accident, and the loss in suffering in mind and body in consequence of the accident, which was decided to be in this case $336, we have a total indemnity of $1695 for the total loss of hearing in one ear.

We will now determine (2) the damages to a similar clerk for the total loss of hearing in both ears. The damage to F, the functional ability of the body, is twice that for the damage of one ear (Table 7, Col. 5), namely, 0.24. Subtracting this from 1, we have 0.76 for the coefficient of F and C, which, introduced into the formula for the normal earning ability of the body, gives: (7) $0.76\ F \times 0.76\ C = E$. It is plainly evident that a person with the total loss of hearing in both ears is damaged as much in C, his competing ability, as in F, his functional ability. If, after due consideration of all the conditions and circumstances in this case, we decide that C, his competing ability, is damaged to the same degree as F, his functional ability, we have: (8) $0.76\ F \times 0.76\ C = E$. Hence $E = 0.5776$ (Table 1, Col. 3), and the loss is 0.4224 on one dollar, or $422.40 on each $1000 of the economic value of the person (Table 3, Col. 2). Multiplying this loss by ten, because his economic value was $10,000, we have $4224. If we add to this loss the loss in time and his expenses incident to the accident and the loss in suffering in his mind and body in consequence of the accident, which in this case was decided to be $596, we have the total indemnity of $4820 for the injury which caused the loss of hearing in both ears. This is $3125 more indemnity than for the total loss of hearing in one ear.

An indemnity for the loss of any part of the hearing in one ear, or in both ears, as given in Table 7, may be readily worked out in the same way. The question to be determined is the amount of the loss of the hearing in one ear, or in both ears, and the effect this loss has upon C, the competing ability, in the vocation of the person.

We will now show how readily we can determine damages to any part, or parts, of the body which may have occurred at the same time as the accident which caused the loss of hearing.

We will determine (3) what the indemnity shall be for the total loss of the hearing in one ear, and the total loss of sight of one eye. Both of these losses occur in unit g, factor w, and therefore may be added together (Tables 6 and 7, Col. 5). We find the same to be 0.30. Subtracting this from 1, we have 0.70 for the coefficient of F, and C, and we have: (9) $0.70\ F \times 0.70\ C = E$. After due consideration of all the conditions and circumstances of C, the competing ability of this person in his vocation as a clerk in the department store, it is decided that C, his competing ability, is damaged to the sixth degree less than F, the functional ability of the body, and we have: (10) $0.70\ F \times 0.70\ C^{1/7} = E$. Hence E, his earning ability, will be 0.6650 (Table 1, Col. 8), and the loss on one dollar is 0.335, or $335 on $1000 (Table 3, Col. 7). Multiplying this by ten, we have $3350 as an indemnity for the total loss of hearing in one ear and the total loss of sight of one eye. If we add the loss of his time and

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expenses and the loss in suffering in his mind and body in consequence of the injury, which was in this case decided to be $324, we have $3674 as a total indemnity for the total loss of hearing in one ear and the total loss of sight in one eye.

For example, (4) the indemnity for the total loss of hearing in both ears and for the total loss of sight in both eyes for a person earning a similar amount would be ascertained as follows: In Table 6 and Table 7, we find for these four losses 0.60. Subtracting this from 1, we have 0.40 for the coefficient of F, and C, the functional and technical abilities; hence: (11) $0.40\ F \times 0.40\ C = E$. The question arises at once, What is the condition of C, the competing ability, in this person, totally blind and deaf? It is plainly evident that he has no competing ability; hence, the exponent of C becomes 0, and we express it in the formula thus: (12) $0.40\ F \times 0.40\ C^0 = E$. Therefore, $E = 0$, because in any computation, when one of the factors becomes 0, the product is 0 also. The loss would be total, or $10,000. If we add the loss in time and expenses before this indemnity is paid and the loss in suffering in mind and body in consequence of this serious loss of both sight and hearing, which in this case was determined to be $2500, we have $12,500 for the total indemnity for this person, 43 years old, earning $2 per day. If he were earning $3 per day, or $900 a year, the indemnity would be $17,500, assuming the expense for loss of time and suffering in mind and body were the same. If he were earning $4 per day, or $1200 per year, the other expenses being the same, the indemnity would be $22,500 and so on. The only other way of determining damages to the body is by empirical methods, using addition and subtraction. This example shows how absurd this would be, for if the other two factors in unit g were normal, which is a conceivable condition, because this person might be totally blind and totally deaf, and the other two factors, u, the brain, and v, the spinal cord, might be normal, and we obtained the loss by subtraction, we would have two factors of this unit left. If the other three units of the body were normal, which is also a conceivable condition, we would have nine other factors, which, added to the two of unit g, would make 11. Therefore, by subtraction and addition we would have 11/12 of F, the functional ability of the body, left when that person was totally blind and deaf.

We will (5) determine the loss to a person earning a similar amount who in an accident sustains a total loss of hearing in one ear, the total loss of sight in one eye, and the loss of the left hand at the wrist-joint. According to Table 5, the loss in unit a is 0.20, and therefore 0.80 is left. According to Table 6, and Table 7, the loss to unit g is 0.30, and therefore 0.70 is left. As these losses occur in two different units, their coefficients must be multiplied together to determine F, the remaining functional ability of the body, and we have: (13) $0.80\ a \times 0.70\ g = F$. Hence, $F = 0.56$. If we determine from all the circumstances in this case that C, his competing ability, is damaged to the first degree more than F, his functional ability, we have: (14) $0.56\ F \times 0.56\ C^2 = E$. Therefore, $E = 0.1756$ (Table 2, Col. 2), and the loss is 0.8244 on one dollar, or $824.40 on $1000, and ten times that on $10,000, or $8244. If we add to this loss the other two losses incident to the injury, which were decided

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to be $1648, we have $9892 as the total indemnity for the total loss of hearing in one ear, total loss of sight in one eye, and the loss of the left hand at the wrist-joint in a person earning $2 per day, at the age of 43 years.

For example, (6) we assume that a clerk 43 years old, in a department store, died from an accident that made the corporation liable for the loss of his life. In the five examples given here to illustrate the application of our method, the damage has been adjusted upon the gross economic value. When a person survives an accident the damage must be adjusted upon that basis, because it costs that person just as much to live after the accident as before it occurred. When a person does not survive an accident, but dies, there are no living expenses incurred for him. Hence the damage must be adjusted upon that basis, which is his net economic value. The net economic value of a person is what he earns less his own personal living expenses (No. 9, Evom Table). In this case the clerk was earning $2 per day, or $600 per year, and his personal living expenses were decided to have been $1 a day, or $300 per year. Therefore his net economic value is just half $10,000, his gross economic value, or $5000 (No. 9, Evom Table, Col. 2). This means that $5000 put at interest and paid out in the form of an annuity at 3½ per cent.—the same rate by which his economic value is computed—will last just as long as the clerk was expected to live and earn this amount of money over and above his personal expenses according to the law of average. The expenses incident to the accident and the loss in suffering in mind and body in consequence of the accident were agreed upon as $1000, which, added to $5000, makes $6000 as the total indemnity for the corporation to pay for the accident which caused the loss of the life of this clerk, earning $2 per day, or $600 per year, at the age of 43 years.

In 1904 I read a paper before the National Association of United States Pension Examining Surgeons and Members of the Bureau of Pensions of the United States at Atlantic City, in which I referred to the fact that the pensions then given were not only based upon empiricism, but were full of inconsistencies and absurdities, and did not do justice to the soldiers and sailors, and therefore should be discarded for scientific methods which would do away with absurdities and do justice to them. The result was that the pensions were revised, and this revision took effect in ten of the principal pensions in 1905, giving a total increase of $1968 each year.

To illustrate some of the inequalities and absurdities existing in the Bureau of Pensions, reference may be made to the two standards for disabilities. The standard for minor disabilities is ankylosis of the wrist-joint, which is rated 8/18, and a pension of $8 per month is given. If any disability is considered to be equal to ankylosis of the wrist it is rated the same, and a pension for the same amount is given. If a disability is considered to be any fractional part of 8/18 it is rated accordingly; for instance, nearly total deafness in one ear is thought to be three-fourths of the disability of ankylosis of the wrist and is therefore rated 6/18, and a pension of $6 per month is given, while total deafness in one ear is considered to be one and a fourth times as much disability as ankylosis of the wrist, and therefore is rated 10/18, and a pension of $10

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per month is given. If the pension for nearly total loss of hearing in one ear is increased to correspond with the increase in the pension for total disability from $72 to $100 per month, it should now be $8.32 per month, and for total loss of hearing in one ear it should now be $13.88 per month. If we compare these pensions with those which may be obtained by the scientific methods of physical economics, we find, according to Table 7, Col. 5, the standard of measurement for nearly total loss of hearing of one ear of the 1° is 0.08. Subtracting this from 1 we have 0.92, which becomes the coefficient of F and C. The other ear being normal, C, the competing ability of the person, would be damaged in most vocations to the least degree, and we have in the formula: (15) $0.92\ F \times 0.92\ C^{1/10} = E$. Hence, $E = 0.9126$ (Table 1, Col. 9), and the loss would be 0.874, for which a pension of $8.74 should be given. The total loss of hearing in one ear has been worked out in one of the examples already given: (5) $0.88\ F \times 0.88\ C^{1/7} = E$. Hence, $E = 0.8641$, and the loss is 0.1359, and a pension of $13.59 should be given when the pension for total disability is $100 per month.

The loss of sight in one eye is considered a disability of one and a half times that of ankylosis of the wrist, and therefore is rated 12/18, and a pension of $12 per month is given, while the loss of an eye is considered two and one-eighth times the disability of ankylosis of the wrist, and therefore is rated 17/18, and a pension of $17 per month is given. If the pensions for total loss of sight in one eye, and for the total loss of an eye, are increased to correspond with the increase in the pensions for total disability from $72 to $100 per month, the former should be increased from $12 to $16.67 per month, and the latter from $17 to $23.61 per month. This is about the same amount as is obtained when the total loss of sight in one eye is determined to affect C, the competing ability of a person, to the least degree in the vocation he follows as expressed in the formula for the normal earning ability of the body: (16) $0.82\ F \times 0.82\ C^{1/10} = E$. Hence, $E = 0.8036$ (Table 1, Col. 9), and the loss is 0.1964, and a pension of $19.64 per month should be given for the total loss of sight in one eye. For the total loss of an eye, the damage to C, the competing ability, would be greater, and if in this loss it is determined that C, the competing ability, is damaged to the second degree less than F, the functional ability, in the vocation followed, we have: $0.82\ F \times 0.82\ C^{1/8} = E$. Hence $E = 0.7675$ (Table 1, Col. 5), and the loss is 0.2325, for which loss a pension of $23.25 per month should be given for the total loss of an eye.

Minor disabilities are rated from 2/18 to 17/18, and a pension is given in dollars to correspond with the number of the numerator. Although the pension for total disability was increased from $72 per month to $100 per month, the pensions for minor disabilities have not been increased accordingly.

The other standard is the degree of disability equivalent to the loss of a hand, or a foot, and a pension of $24 per month is given. This method does not provide for a pension to be given for $18, $19, $20, $21, $22, or $23 per month, as if there were no disabilities for which pensions could be given for these amounts. When a disability is considered equivalent to that of the loss of a hand or foot, it is rated the same, and a pension of $24 per month is given.

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When, however, a soldier or sailor has actually lost a hand at the wrist-joint, or a foot at the ankle-joint, a pension of $30 per month is given. This difference of $6 per month may have been in recognition of the greater damage to the competing ability of a soldier or sailor when he had actually lost a hand or a foot than when he suffered from a disability equivalent to the loss of a hand or a foot, because when a hand or a foot was lost it could be seen by everybody, whereas the equivalent disability might not be so readily seen. When, however, a hand and a foot were lost, a pension of $36 per month was given. In this double disability there was only an increase of $6 per month. This is altogether insufficient and does a great injustice to any soldier or sailor who has sustained such a serious injury, as may be shown from the scientific methods of physical economics. According to Table 5, the standard of measurement for the loss of a hand or a foot is 0.20. Therefore when this loss alone is sustained and it is expressed in the formula for the normal earning ability of the body, we have: (18) $0.80\ F \times 0.80\ C = E$. If the loss were a foot, and we determined that C, the competing ability of the person, was damaged to the first degree less than F, the functional ability, in the vocation followed, then the same would be expressed in the formula for the normal earning ability of the body as follows: (19) $0.80\ F \times 0.80\ C^{1/2} = E$. Hence, $E = 0.7152$ (Table 1, Col. 4). The loss would be 0.2848, and, therefore, a pension of $28.48 per month should be given for the loss of a foot when a pension of $100 per month is given for total disability. If the left hand were lost, in a right-handed person, and we determined that C, the competing ability, was damaged to the same degree as F, the functional ability, then it would be expressed in the formula for the normal earning ability of the body as follows: (20) $0.80\ F \times 0.80\ C = E$. Hence, $E = 0.64$ (Table 1, Col. 3), and the loss would be 0.36. Therefore, a pension of $36 a month should be given for the loss of the left hand. If the right hand were lost in a right-handed person, and we determined that C, the competing ability of the person, was damaged to the first degree more than F, the functional ability, in the vocation followed, then it would be expressed in the formula for the normal earning ability of the body as follows: (21) $0.80\ F \times 0.80\ C^2 = E$. Hence, $E = 0.512$ (Table 2, Col. 2), and the loss would be 0.4880, and a pension of $48.80 per month should be given for the loss of the right hand. If a hand and a foot were lost we find the sum of these two losses in Table 5 to be 0.40, and, subtracting this from 1, we have in the formula for the normal earning ability of the body: (22) $0.60\ F \times 0.60\ C = E$. We must then determine how this serious loss affects the person in the vocation followed. It is self-evident that the loss of a hand and a foot at the same time would damage C, the competing ability of a person, more than the loss of either one alone. We then determined that the damage to C, the competing ability, was equal to the first degree less than to F, the functional ability, when a foot was lost at the ankle-joint, that the former was damaged to the same degree when the left hand was lost, and that the former was damaged to the first degree more than the latter when the right hand was lost. It would be conservative then to decide that, when a foot and left hand were lost, C, the competing ability, would be damaged to the same degree as F, the

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functional ability, and we have: (23) 0.60 F $\times$ 0.60 C = E. Hence E = 0.36 (Table 1, Col. 3), and the loss would be 0.64, for which a pension of $64 per month should be given for the loss of a foot and the left hand. If the right hand and a foot were lost it would be conservative to determine that C, the competing ability, was damaged to the first degree more than F, the functional ability, because when the right hand alone was lost we determined that C, the competing ability, was damaged to the first degree more than F, the functional ability, and we have: (24) 0.60 F $\times$ 0.60 C^2 = E. Hence, E = 0.216 (Table 2, Col. 2), and the loss would be 0.784, for which a pension of $78.40 should be given for the loss of a foot and the right hand.

In the revision of the pensions brought about by my paper the pension for the loss of a hand and a foot was increased from $36 to $60 per month. That C, the competing ability, is still not duly recognized in the Bureau of Pensions is very evident from the cases just cited of the loss of a foot, a left hand, or a right hand, or when a foot is lost with the right or left hand. The pension for the loss of both hands was established by a vote of Congress to be $100 per month, whereas the pension for total disability, like that of the loss of both eyes, was $72 per month. The pension for total loss of hearing in both ears was $30 per month. This was increased in the revision of the pensions to $40 per month. The latter is very nearly the same as is obtained in equation 8, 0.74 F $\times$ 0.76 C = E, when E = 0.5776 (Table 1, Col. 3), and the damage is 0.4224, or $42.24 per month when the pension for total disability is $100 per month.

These examples might be multiplied indefinitely, but a sufficient number and variety have been given to show how damages to any part, or parts, of the body may be obtained by the formulas and the scientific and economic standards of measurement.

Those who have considered this subject but little often express distrust of any method which employs a mathematical formula that determines E, the earning ability of a person, and his economic value therefrom, in dollars and cents. They say there is so much uncertainty about C, the competing ability of persons, that they do not see how it can be determined with any degree of reliability. When, however, they admit that life itself is the most uncertain thing in this world, and from its existence the law of average is deduced, upon which the life table is constructed, and life insurance, the largest business of the world, is projected and carried on successfully, they become convinced that it is feasible and practical, because they then realize that the principal factor in determining E, the earning ability of a person, and his economic value, depends upon the same law of average as that by which the life table itself is constructed.

There may be a difference of opinion as to the standards of measurement for determining the loss to F, the functional ability of the body, in any given case of damage. The tables here given may not be the final determination in these problems, but they are the best I have to offer after studying the subject for years, and testing them with all the conditions and circumstances connected with such damages, and the results obtained by empirical methods in courts of

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law and in the Bureau of Pensions of the United States. At first sight the amount given in the tables for the loss specified would seem to be too low, but it must be remembered that the standard of measurement for the functional loss of any part, or parts, of the body must be so low that the loss to F, the functional ability of the body, would be equal to this amount to a person in any vocation. In determining these standards of measurement for the partial and total loss of hearing, this fact, that they must be made so low as to meet this loss equitably in persons of every vocation, has been kept constantly in view. We feel sure, then, that when a person has sustained a total or partial loss of hearing in one ear or both ears, and the damage to F, the functional ability of the body, has been adjusted by this table, the loss to E, the earning ability, can always be equitably determined in every case by considering how this damage affects C, the competing ability, in the vocation the person follows. Hence, we are forced to the conclusion that the standard of measurement determined upon in Table 7 meets and satisfies every condition connected with the partial or complete loss of hearing in one or both ears for determining damages to E, the earning ability of a person, in a manner equitable to all concerned.

TABLE 1.

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Loss in F	Computations made when C, the competing ability, is damaged to the same degree as F, the functional ability, and when C, the competing ability, is damaged to six different degrees less than F, the functional ability								
	F	C	E=	C^{1-2} E=	C^{1-3} E=	C^{1-4} E=	C^{1-5} E=	C^{1-7} E=	C^{1-10} E=
0.01	.99	.99	=0.9801	0.985	0.9865	0.9875	0.988	0.9884	0.989
0.02	.98	.98	=0.9604	0.9702	0.9731	0.9751	0.976	0.9770	0.9780
0.03	.97	.97	=0.9409	0.9554	0.9593	0.9622	0.9641	0.9651	0.9670
0.04	.96	.96	=0.9216	0.9408	0.9465	0.9504	0.9523	0.9542	0.9561
0.05	.95	.95	=0.9025	0.9262	0.9388	0.9376	0.9405	0.9424	0.9452
0.06	.94	.94	=0.8836	0.9118	0.9202	0.9259	0.9277	0.9315	0.9343
0.07	.93	.93	=0.8649	0.8965	0.9067	0.9132	0.9151	0.9197	0.9234
0.08	.92	.92	=0.8464	0.8822	0.8942	0.9006	0.9043	0.9089	0.9126
0.09	.91	.91	=0.8281	0.8681	0.8898	0.8881	0.8927	0.8972	0.9001
0.10	.90	.90	=0.81	0.8541	0.8685	0.8766	0.8811	0.8865	0.8901
0.11	.89	.89	=0.7921	0.8392	0.8552	0.8641	0.8695	0.8748	0.8784
0.12	.88	.88	=0.7744	0.8254	0.8430	0.8527	0.8580	0.8641	0.8685
0.13	.87	.87	=0.7569	0.8108	0.8308	0.8404	0.8456	0.8526	0.8578
0.14	.86	.86	=0.7396	0.7972	0.8187	0.8290	0.8342	0.8419	0.8571
0.15	.85	.85	=0.7225	0.7828	0.8058	0.8160	0.8228	0.8304	0.8347
0.16	.84	.84	=0.7056	0.7694	0.7926	0.8047	0.8114	0.8190	0.8257
0.17	.83	.83	=0.6889	0.7561	0.7802	0.7885	0.7992	0.8075	0.8142
0.18	.82	.82	=0.6724	0.7429	0.7675	0.7806	0.7880	0.7970	0.8036
0.19	.81	.81	=0.6561	0.729	0.7549	0.7686	0.7759	0.7857	0.7929
0.20	.80	.80	=0.64	0.7152	0.7424	0.7568	0.7648	0.7752	0.7824
0.21	.79	.79	=0.6241	0.6915	0.7299	0.7449	0.7528	0.7639	0.7710
0.22	.78	.78	=0.6084	0.6887	0.7183	0.7332	0.7417	0.7527	0.7605
0.23	.77	.77	=0.5929	0.6752	0.7060	0.7214	0.7299	0.7415	0.7499
0.24	.76	.76	=0.5776	0.6627	0.6938	0.7098	0.7189	0.7303	0.7394
0.25	.75	.75	=0.5625	0.6495	0.6817	0.6982	0.7072	0.7192	0.7282
0.26	.74	.74	=0.5476	0.6371	0.6697	0.6867	0.6963	0.7089	0.7178
0.27	.73	.73	=0.5329	0.6241	0.6577	0.6752	0.6847	0.6978	0.7073
0.28	.72	.72	=0.5184	0.6112	0.6458	0.6638	0.6739	0.6868	0.6969
0.29	.71	.71	=0.5041	0.5985	0.6340	0.6517	0.6624	0.6759	0.6858
0.30	.70	.70	=0.49	0.5859	0.6223	0.6405	0.6517	0.6650	0.6755
0.31	.69	.69	=0.4761	0.5738	0.6099	0.6285	0.6403	0.6541	0.6679
0.32	.68	.68	=0.4624	0.561	0.5984	0.6174	0.6296	0.6432	0.6541
0.33	.67	.67	=0.4489	0.5487	0.5862	0.6056	0.6184	0.6324	0.6432

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TABLE 1—Concluded.

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Loss in F	Computations made when C, the competing ability, is damaged to the same degree as F, the functional ability, and when C, the competing ability, is damaged to six different degrees less than F, the functional ability								
	F	C	E=	$C_{1\text{-}2}$ E=	$C_{1\text{-}3}$ E=	$C_{1\text{-}4}$ E=	$C_{1\text{-}5}$ E=	$C_{1\text{-}7}$ E=	$C_{1\text{-}10}$ E=
0.34	.66	.66	=0.4356	0.5365	0.5748	0.5946	0.6078	0.6217	0.6329
0.35	.65	.65	=0.4225	0.5239	0.5629	0.5830	0.5967	0.6110	0.6220
0.36	.64	.64	=0.4096	0.512	0.5516	0.5721	0.5856	0.6003	0.6118
0.37	.63	.63	=0.3969	0.4995	0.5399	0.5607	0.5745	0.5896	0.6010
0.38	.62	.62	=0.3844	0.4879	0.5288	0.5499	0.5635	0.5790	0.5908
0.39	.61	.61	=0.3721	0.4758	0.5172	0.5386	0.5526	0.5685	0.5801
0.40	.60	.60	=0.36	0.4644	0.5058	0.5280	0.5418	0.5580	0.5700
0.41	.59	.59	=0.3481	0.4525	0.4944	0.5174	0.531	0.5475	0.5593
0.42	.58	.58	=0.3364	0.4413	0.4837	0.5075	0.5202	0.5370	0.5492
0.43	.57	.57	=0.3249	0.4297	0.4725	0.4959	0.5090	0.5261	0.5386
0.44	.56	.56	=0.3136	0.4188	0.4614	0.4884	0.4984	0.5157	0.5286
0.45	.55	.55	=0.3025	0.4075	0.4504	0.4735	0.4878	0.5049	0.5181
0.46	.54	.54	=0.2916	0.3969	0.4395	0.4627	0.4773	0.4946	0.5076
0.47	.53	.53	=0.2809	0.3858	0.4287	0.4520	0.4664	0.4838	0.4971
0.48	.52	.52	=0.2704	0.3749	0.4180	0.4414	0.4560	0.4737	0.4872
0.49	.51	.51	=0.2601	0.3641	0.4080	0.4309	0.4447	0.4630	0.4768
0.50	.50	.50	=0.25	0.3535	0.3985	0.4205	0.4350	0.4530	0.4665
0.51	.49	.49	=0.2401	0.3430	0.3871	0.4096	0.4243	0.4424	0.4561
0.52	.48	.48	=0.2304	0.3326	0.3758	0.3993	0.4142	0.4324	0.4459
0.53	.47	.47	=0.2209	0.3219	0.3651	0.3886	0.4037	0.4220	0.4356
0.54	.46	.46	=0.2116	0.3118	0.3551	0.3785	0.3937	0.4117	0.4255
0.55	.45	.45	=0.2025	0.3015	0.3447	0.3681	0.3834	0.4014	0.4153
0.56	.44	.44	=0.1936	0.2917	0.3348	0.3581	0.3735	0.3911	0.4052
0.57	.43	.43	=0.1849	0.2795	0.3225	0.3478	0.3633	0.3809	0.3951
0.58	.42	.42	=0.1764	0.2721	0.3145	0.3381	0.3532	0.3708	0.3851
0.59	.41	.41	=0.1681	0.2624	0.3046	0.3321	0.3431	0.3595	0.3747
0.60	.40	.40	=0.16	0.2528	0.2948	0.3180	0.3332	0.3504	0.3648
0.61	.39	.39	=0.1521	0.2433	0.2847	0.3081	0.3229	0.3408	0.3549
0.62	.38	.38	=0.1444	0.2340	0.2751	0.2983	0.3131	0.3309	0.3450
0.63	.37	.37	=0.1369	0.2249	0.2652	0.2886	0.3030	0.3207	0.3348
0.64	.36	.36	=0.1296	0.216	0.2559	0.2791	0.2934	0.3110	0.3250
0.65	.35	.35	=0.1225	0.2068	0.2481	0.2709	0.2835	0.3010	0.3150
0.66	.34	.34	=0.1156	0.1982	0.2373	0.2597	0.2740	0.2913	0.3053
0.67	.33	.33	=0.1089	0.1894	0.2280	0.2501	0.2643	0.2814	0.2953
0.68	.32	.32	=0.1024	0.1811	0.2188	0.2406	0.2547	0.2720	0.2854
0.69	.31	.31	=0.0961	0.1726	0.2095	0.2312	0.2452	0.2622	0.2755
0.70	.30	.30	=0.09	0.1644	0.2007	0.222	0.2358	0.2526	0.2658
0.71	.29	.29	=0.0841	0.1560	0.1902	0.2125	0.2262	0.2430	0.2560
0.72	.28	.28	=0.0784	0.1481	0.1831	0.2035	0.2170	0.2335	0.2464
0.73	.27	.27	=0.0729	0.1401	0.1744	0.1944	0.2076	0.2238	0.2367
0.74	.26	.26	=0.0676	0.1326	0.1658	0.1856	0.1986	0.2145	0.2272
0.75	.25	.25	=0.0625	0.1250	0.1572	0.1767	0.1895	0.2050	0.2175
0.76	.24	.24	=0.0576	0.1176	0.1490	0.1680	0.1804	0.1958	0.2080
0.77	.23	.23	=0.0529	0.1101	0.1407	0.1591	0.1713	0.1865	0.1984
0.78	.22	.22	=0.0484	0.1031	0.1328	0.1507	0.1625	0.1773	0.1889
0.79	.21	.21	=0.0441	0.0961	0.1247	0.1421	0.1537	0.168	0.1795
0.80	.20	.20	=0.04	0.0894	0.1170	0.1338	0.1450	0.1588	0.1702

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TABLE 2.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Loss in F	Computations made when C', the competing ability, is damaged from 2 to 10 degrees more than F, the functional ability								
	C^2 E=	C^3 E=	C^4 E=	C^5 E=	C^6 E=	C^7 E=	C^8 E=	C^9 E=	C^{10} E=
0.01	0.9702	0.9604	0.9507	0.9411	0.9316	0.9222	0.9129	0.9039	0.8948
0.02	0.9415	0.9222	0.9037	0.8856	0.8678	0.8504	0.8333	0.8166	0.8002
0.03	0.9126	0.8852	0.8586	0.8328	0.8078	0.7835	0.7599	0.7371	0.7149
0.04	0.8847	0.8493	0.8153	0.7826	0.7512	0.7211	0.6922	0.6645	0.6379
0.05	0.8573	0.8144	0.7736	0.7349	0.6981	0.6631	0.6299	0.5984	0.5684
0.06	0.8305	0.7806	0.7337	0.6896	0.6482	0.6093	0.5727	0.5383	0.5060
0.07	0.8043	0.7479	0.6955	0.6468	0.6015	0.5593	0.5251	0.4883	0.4541
0.08	0.7786	0.7163	0.6589	0.6061	0.5515	0.5073	0.4667	0.4293	0.3949
0.09	0.7535	0.6856	0.6238	0.5676	0.5165	0.4700	0.4277	0.3692	0.3359
0.10	0.729	0.6561	0.5904	0.5313	0.4781	0.4302	0.3871	0.3483	0.3133
0.11	0.7049	0.6273	0.5582	0.4967	0.4420	0.3933	0.3500	0.3115	0.2772
0.12	0.6814	0.5996	0.5276	0.4642	0.4084	0.3593	0.3161	0.2781	0.2447
0.13	0.6583	0.5727	0.4982	0.4334	0.3770	0.3279	0.2852	0.2481	0.2158
0.14	0.6360	0.5469	0.4703	0.4044	0.3477	0.293	0.2519	0.2166	0.1862
0.15	0.6141	0.5219	0.4436	0.377	0.3204	0.2723	0.2314	0.1966	0.1671
0.16	0.5927	0.4978	0.4181	0.3512	0.295	0.2478	0.2081	0.1748	0.1467
0.17	0.5717	0.4745	0.3938	0.3268	0.2712	0.225	0.1887	0.1566	0.1299
0.18	0.5513	0.4520	0.3706	0.3038	0.2491	0.2042	0.1674	0.1372	0.1125
0.19	0.5314	0.4304	0.3486	0.2823	0.2286	0.1851	0.1499	0.1214	0.0983
0.20	0.512	0.4096	0.3276	0.2620	0.2096	0.1676	0.134	0.1072	0.0859
0.21	0.4930	0.3894	0.3076	0.2430	0.1919	0.1516	0.1197	0.0945	0.0746
0.22	0.4745	0.3701	0.2886	0.2251	0.1755	0.1368	0.1067	0.0832	0.0648
0.23	0.4565	0.3515	0.2706	0.2083	0.1603	0.1234	0.095	0.0731	0.0562
0.24	0.4389	0.3335	0.2534	0.1925	0.1463	0.1111	0.0844	0.0641	0.0487
0.25	0.4218	0.3163	0.2372	0.1779	0.1334	0.1000	0.075	0.0562	0.0421
0.26	0.4052	0.2998	0.2218	0.1641	0.1214	0.0898	0.0664	0.0491	0.0363
0.27	0.3890	0.2839	0.2072	0.1512	0.1103	0.0805	0.0587	0.0428	0.0312
0.28	0.3732	0.2687	0.1934	0.1392	0.1002	0.0721	0.0519	0.0373	0.0268
0.29	0.3579	0.2541	0.1804	0.1280	0.0908	0.0644	0.0457	0.0324	0.023
0.30	0.343	0.2401	0.168	0.1176	0.0823	0.0576	0.0403	0.0282	0.0197
0.31	0.3285	0.2266	0.1563	0.1078	0.0743	0.0512	0.0353	0.0243	0.0167
0.32	0.3144	0.2137	0.1453	0.0988	0.0671	0.0456	0.031	0.0210	0.0142
0.33	0.3007	0.2014	0.1349	0.0903	0.0605	0.0405	0.0271	0.0181	0.0121
0.34	0.2874	0.1896	0.1251	0.0825	0.0544	0.0359	0.0236	0.0155	0.0102
0.35	0.2746	0.1784	0.1159	0.0753	0.0489	0.0317	0.0206	0.0133	0.0086
0.36	0.2621	0.1679	0.1073	0.0686	0.0439	0.028	0.0179	0.0114	0.0072
0.37	0.2500	0.1575	0.0992	0.0624	0.0393	0.0247	0.0155	0.0097	0.0061
0.38	0.2383	0.1477	0.0915	0.0567	0.0351	0.0217	0.0134	0.0083	0.0051
0.39	0.2269	0.1384	0.0844	0.0514	0.0313	0.019	0.0115	0.007	0.0042
0.40	0.216	0.1296	0.0777	0.0466	0.0279	0.0167	0.01	0.006	0.0036
0.41	0.2053	0.1211	0.0714	0.0421	0.0248	0.0146	0.0086	0.005	0.0029
0.42	0.1951	0.1131	0.0655	0.0379	0.0219	0.0127	0.0073	0.0042	0.0024
0.43	0.1851	0.1055	0.0601	0.0342	0.0194	0.011	0.0062	0.0035	0.0019
0.44	0.1756	0.0983	0.055	0.0308	0.0172	0.0096	0.0053	0.0029	0.0016
0.45	0.1663	0.0914	0.0502	0.0275	0.0151	0.0083	0.0045	0.0026	0.0014
0.46	0.1574	0.0849	0.0458	0.0247	0.0133	0.0071	0.0038	0.002	0.001
0.47	0.1488	0.0788	0.0417	0.0221	0.0117	0.0062	0.0032	0.0016	0.0008
0.48	0.1406	0.0731	0.038	0.0197	0.0102	0.0053	0.0027	0.0014	0.0007
0.49	0.1326	0.0676	0.0344	0.0175	0.0089	0.0045	0.0022	0.0011	0.0005
0.50	0.1250	0.0625	0.0312	0.0156	0.0078	0.0039	0.0019	0.0009	0.0004
0.51	0.1176	0.0576	0.0282	0.0138	0.0067	0.0032	0.0015	0.0007	0.0003
0.52	0.1105	0.0530	0.0254	0.0121	0.0058	0.0027	0.0012	0.0005	0.0002
0.53	0.1038	0.0487	0.0228	0.0107	0.0050	0.0023	0.0010	0.0004	0.0001
0.54	0.0973	0.0447	0.0205	0.0094	0.0043	0.0019	0.0008	0.0003	0.0001
0.55	0.0911	0.0409	0.0184	0.0082	0.0036	0.0016	0.0007	0.0003	0.0001
0.56	0.0851	0.0374	0.0164	0.0072	0.0031	0.0013	0.0005	0.0002	0.0000
0.57	0.0795	0.0341	0.0146	0.0062	0.0026	0.0011	0.0004	0.0001	
0.58	0.0740	0.0310	0.013	0.0054	0.0022	0.0009	0.0003	0.0001	
0.59	0.0689	0.0282	0.0115	0.0047	0.0019	0.0007	0.0002	0.0000	
0.60	0.064	0.0256	0.0102	0.004	0.0016	0.0006	0.0002		
0.61	0.0593	0.0231	0.009	0.0035	0.0013	0.0005	0.0001		

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TABLE 2—Concluded.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Loss in F	Computations made when C, the competing ability, is damaged from 2 to 10 degrees more than F, the functional ability								
	C^2 E=	C^3 E=	C^4 E=	C^5 E=	C^6 E=	C^7 E=	C^8 E=	C^9 E=	C^{10} E=
0.62	0.0548	0.0208	0.0079	0.0030	0.0011	0.0004	0.0001		
0.63	0.0506	0.0187	0.0069	0.0025	0.0009	0.0003	0.0001		
0.64	0.0466	0.0167	0.006	0.0021	0.0007	0.0002	0.0000		
0.65	0.0428	0.0149	0.0052	0.0018	0.0006	0.0001			
0.66	0.0393	0.0133	0.0045	0.0015	0.0005	0.0001			
0.67	0.0359	0.0118	0.0038	0.0012	0.0003	0.0000			
0.68	0.0327	0.0104	0.0033	0.0010	0.0003				
0.69	0.0297	0.0092	0.0028	0.0008	0.0002				
0.70	0.027	0.0081	0.0024	0.0007	0.0002				
0.71	0.0243	0.007	0.002	0.0005	0.0001				
0.72	0.0219	0.0061	0.0017	0.0004	0.0001				
0.73	0.0196	0.0052	0.0014	0.0003	0.0000				
0.74	0.0175	0.0045	0.0011	0.0002					
0.75	0.0156	0.0039	0.0009	0.0002					
0.76	0.0138	0.0032	0.0007	0.0001					
0.77	0.0121	0.0027	0.0005	0.0001					
0.78	0.0106	0.0023	0.0005	0.0001					
0.79	0.0092	0.0019	0.0003	0.0000					
0.80	0.008	0.0016	0.0003						

TABLE 3.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Loss in F	Loss on $1000, when C, the competing ability, is damaged to the same degree as F, the functional ability, and when C, the competing ability, is damaged to six different degrees less than F, the functional ability						
	C^1	C^{1-2}	C^{1-3}	C^{1-4}	C^{1-5}	C^{1-7}	C^{1-10}
0.01	$ 19.90	$ 15.00	$ 13.50	$ 12.50	$ 12.00	$ 11.60	$ 11.00
0.02	39.60	29.80	26.90	24.90	24.00	23.00	22.00
0.03	59.10	44.60	40.70	37.80	35.90	34.90	33.00
0.04	70.40	59.20	53.50	49.60	47.70	45.80	43.90
0.05	97.50	73.80	66.20	62.40	59.50	57.60	54.80
0.06	116.40	88.20	79.80	74.10	72.30	68.50	65.70
0.07	135.10	103.50	93.30	86.80	84.90	80.30	76.60
0.08	153.60	117.80	105.80	99.40	95.70	91.10	87.40
0.09	171.90	131.90	110.20	111.90	107.30	102.80	99.90
0.10	190.00	145.90	131.50	123.40	118.90	113.50	109.90
0.11	207.90	160.80	144.80	135.90	130.50	125.50	121.60
0.12	225.60	174.60	157.00	147.30	142.00	135.90	131.50
0.13	243.10	189.20	169.20	159.60	154.40	147.40	142.20
0.14	260.40	202.80	181.30	171.00	165.80	158.10	152.90
0.15	277.50	217.20	194.20	184.00	177.20	169.60	165.30
0.16	294.40	230.60	207.40	195.30	188.60	181.00	174.30
0.17	311.10	243.90	219.80	211.50	200.80	192.50	185.80
0.18	327.60	257.10	232.50	219.40	212.00	203.00	196.40
0.19	343.90	271.00	245.10	231.40	224.10	214.30	207.10
0.20	360.00	284.80	257.60	243.20	235.20	224.80	217.60
0.21	375.90	308.50	270.10	255.10	247.20	236.10	229.00
0.22	391.60	311.30	281.70	266.80	258.30	247.30	239.50
0.23	407.10	324.80	294.00	278.60	270.10	258.50	250.10
0.24	422.40	347.30	306.20	290.20	281.10	269.70	260.60
0.25	437.50	350.50	318.30	301.80	292.80	280.80	271.80
0.26	452.40	362.90	330.30	312.30	303.70	291.10	282.20
0.27	467.10	375.90	342.30	324.80	315.30	302.20	292.70
0.28	481.60	388.80	354.20	336.20	326.10	313.20	303.10
0.29	495.90	401.50	366.00	348.30	337.60	324.10	313.50
0.30	510.00	414.10	377.70	359.50	348.30	335.00	324.50
0.31	523.90	426.70	390.10	371.50	359.70	345.90	334.90

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TABLE 3—Concluded.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Loss in F	Loss on $1000, when C, the competing ability, is damaged to the same degree as F, the functional ability, and when C, the competing ability, is damaged to six different degrees less than F, the functional ability						
	C_1	C_{1-2}	C_{1-3}	C_{1-4}	C_{1-5}	C_{1-7}	C_{1-10}
0.32	537.60	439.00	401.60	382.60	370.40	356.80	345.90
0.33	551.10	451.30	413.80	394.40	381.60	367.60	356.80
0.34	564.40	463.50	425.20	405.40	392.20	378.30	367.10
0.35	577.50	476.10	437.10	417.00	403.30	389.00	378.00
0.36	590.40	488.00	448.40	427.90	414.40	397.70	388.20
0.37	603.10	500.50	460.10	439.30	425.50	410.40	399.00
0.38	615.60	512.10	471.20	450.10	436.50	421.00	409.20
0.39	627.90	524.20	482.80	461.40	447.40	431.50	419.90
0.40	640.00	535.60	494.20	472.00	458.20	442.00	430.00
0.41	651.90	547.50	505.60	482.60	469.00	452.50	440.70
0.42	663.60	558.70	516.30	492.50	478.80	463.00	450.80
0.43	675.10	570.30	527.50	504.10	491.00	473.90	461.40
0.44	686.40	581.20	538.60	511.60	501.60	484.30	471.40
0.45	697.50	592.50	549.60	526.50	512.20	495.10	481.90
0.46	708.40	603.10	560.50	537.30	522.70	505.40	492.40
0.47	719.10	614.20	571.30	548.00	533.60	516.20	502.90
0.48	729.60	625.10	582.00	558.00	544.00	526.30	512.80
0.49	739.90	635.90	592.00	569.10	555.30	537.00	523.20
0.50	750.00	646.50	601.50	579.50	565.00	547.00	533.50
0.51	759.60	657.00	612.90	590.40	575.70	557.60	543.90
0.52	769.60	667.40	624.20	600.70	585.80	567.60	554.10
0.53	779.10	678.10	634.90	611.40	596.30	578.00	564.40
0.54	788.40	688.20	644.90	621.50	606.40	588.30	574.50
0.55	795.50	698.50	655.30	631.90	616.60	598.60	584.70
0.56	806.40	708.30	665.20	641.90	626.50	608.90	594.80
0.57	815.10	720.50	677.50	652.20	637.70	619.10	604.90
0.58	823.50	727.90	685.50	661.90	646.80	629.20	614.90
0.59	831.90	737.60	695.40	667.90	656.90	640.90	625.30
0.60	840.00	747.20	705.20	682.00	666.80	649.20	635.20
0.61	847.10	756.70	715.30	691.90	677.10	659.20	645.10
0.62	855.60	766.00	724.90	701.70	686.90	669.10	655.00
0.63	863.10	775.10	734.80	711.40	697.00	679.30	665.20
0.64	870.40	784.00	744.10	720.90	706.60	689.00	675.00
0.65	877.50	793.20	751.90	729.10	716.50	699.00	685.00
0.66	884.40	801.80	762.70	740.30	726.00	708.70	694.70
0.67	891.10	810.60	772.00	749.90	735.70	718.60	704.70
0.68	897.60	818.90	781.20	759.40	745.30	728.00	714.60
0.69	903.90	827.40	790.50	768.80	754.80	737.80	724.50
0.70	910.00	835.60	799.30	778.00	764.20	747.40	734.20
0.71	915.90	844.00	809.80	787.50	773.80	757.00	744.00
0.72	962.60	851.90	816.90	796.50	783.00	766.50	753.60
0.73	927.10	858.90	825.60	805.60	792.40	776.20	763.30
0.74	932.40	867.40	834.20	814.40	801.40	785.50	772.80
0.75	937.50	875.00	842.80	823.30	810.50	795.00	782.50
0.76	942.40	882.40	851.00	832.00	819.60	804.20	792.00
0.77	947.10	889.90	859.30	840.90	828.70	813.50	801.60
0.78	951.50	896.90	867.20	849.30	837.50	822.70	811.10
0.79	955.10	903.90	875.30	857.90	846.30	832.00	820.50
0.80	960.00	910.60	883.00	866.20	855.00	841.20	829.80

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TABLE 4.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Loss in F	Loss on $1000 when C, the competing ability, is damaged from 2 to 10 degrees more than F, the functional ability								
	C^2	C^3	C^4	C^5	C^6	C^7	C^8	C^9	C^{10}
0.01	$ 29.80	$ 39.60	$ 49.30	$ 58.90	$ 68.40	$ 77.80	$ 87.10	$ 96.10	$105.20
0.02	58.50	97.80	96.30	114.40	132.20	149.60	166.70	183.40	199.80
0.03	87.40	114.80	141.40	167.20	192.20	216.50	240.10	262.90	285.10
0.04	115.30	150.70	184.70	217.40	248.80	278.90	307.80	335.50	362.10
0.05	142.70	185.60	226.40	265.10	301.90	336.90	370.10	401.60	431.60
0.06	169.50	219.40	266.30	310.40	351.80	390.70	427.30	461.70	494.00
0.07	195.70	252.10	304.50	353.20	398.50	440.70	474.90	511.70	545.90
0.08	221.40	283.70	341.10	393.90	448.50	492.70	533.30	570.70	605.10
0.09	246.50	314.40	376.20	432.40	483.50	530.00	572.30	630.80	664.10
0.10	271.00	343.90	409.60	468.70	521.90	569.80	612.90	651.70	686.70
0.11	295.10	372.70	441.80	503.80	558.00	606.70	650.00	688.50	722.80
0.12	318.60	400.40	472.40	535.80	591.60	640.70	683.90	721.90	755.30
0.13	341.70	427.30	501.80	566.60	623.00	672.10	714.80	751.90	784.20
0.14	364.00	453.10	529.70	595.60	652.30	707.00	748.10	783.40	813.80
0.15	385.90	478.10	556.40	623.00	679.60	727.70	768.60	803.40	832.90
0.16	407.30	502.20	581.90	648.80	705.00	752.20	791.90	825.20	853.30
0.17	428.30	525.50	606.20	673.20	728.80	775.00	811.30	843.40	870.10
0.18	448.70	548.00	629.40	696.20	750.90	795.80	832.60	862.80	887.50
0.19	468.60	569.60	651.40	717.70	771.40	814.90	850.10	878.60	901.70
0.20	488.00	590.40	672.40	738.00	790.40	832.40	866.00	892.80	914.10
0.21	507.00	610.60	692.40	757.00	808.10	848.40	880.30	905.50	925.40
0.22	525.50	629.90	711.40	744.90	824.50	863.20	893.30	916.80	935.20
0.23	543.50	648.50	729.40	791.70	839.70	876.60	905.00	926.90	943.80
0.24	561.10	666.50	746.60	807.50	853.70	888.90	915.60	935.90	951.30
0.25	578.20	683.70	762.80	822.10	866.60	900.00	925.00	943.80	959.90
0.26	594.80	700.20	778.20	835.90	878.60	910.20	933.60	950.90	963.70
0.27	611.00	716.10	792.80	848.80	889.70	919.50	941.30	957.20	968.80
0.28	626.80	731.30	806.60	860.80	899.80	927.90	948.10	962.70	973.20
0.29	642.10	745.90	819.60	872.00	909.20	935.60	954.30	967.00	977.00
0.30	657.00	759.90	832.00	882.40	917.70	942.40	959.70	971.80	980.30
0.31	671.50	773.40	843.70	892.20	925.70	948.80	964.70	975.70	983.30
0.32	685.60	786.30	854.70	901.20	932.90	954.40	969.00	979.00	985.80
0.33	699.30	798.60	865.10	907.70	939.50	959.50	972.90	981.90	987.90
0.34	712.60	810.40	874.90	917.50	945.60	964.10	976.40	984.50	989.80
0.35	725.40	821.60	884.10	924.70	951.10	968.30	979.40	986.70	991.40
0.36	737.90	832.10	892.70	931.40	956.10	972.00	982.10	988.60	992.80
0.37	750.00	842.50	900.80	937.60	960.70	975.30	984.50	990.30	993.90
0.38	761.70	852.30	908.50	943.30	964.90	978.30	986.60	991.70	994.90
0.39	773.10	861.60	915.60	948.60	968.70	981.00	988.50	993.00	995.80
0.40	784.00	870.40	922.30	953.40	972.10	983.30	990.00	994.00	996.40
0.41	794.70	878.90	928.60	957.90	975.20	985.40	991.40	995.00	997.10
0.42	804.90	886.90	934.50	962.10	978.10	987.30	992.70	995.80	997.60
0.43	814.90	894.50	939.90	965.80	980.60	989.00	993.80	996.50	998.10
0.44	824.40	901.70	945.00	969.20	982.80	990.40	994.70	997.10	998.40
0.45	833.70	908.60	949.80	972.50	984.90	991.70	995.50	997.40	998.60
0.46	824.60	915.10	954.20	975.30	986.70	992.90	996.20	998.00	999.00
0.47	851.20	921.20	958.30	979.90	988.30	993.80	996.80	998.40	999.20
0.48	859.40	926.90	962.00	980.30	989.80	994.70	997.30	998.60	999.30
0.49	867.40	932.40	965.60	982.50	991.10	995.50	997.80	998.90	999.50
0.50	875.00	937.50	968.80	984.40	992.20	996.10	998.10	999.10	999.60
0.51	882.40	942.40	971.80	986.20	993.30	996.80	998.50	999.30	999.70
0.52	889.50	947.00	974.60	987.90	994.20	997.30	998.80	999.50	999.80
0.53	896.20	951.30	977.20	989.30	995.00	997.70	999.00	999.60	999.90
0.54	902.70	955.30	979.50	990.60	995.70	998.10	999.20	999.70	999.90
0.55	908.90	959.10	981.60	991.80	996.40	998.40	999.30	999.70	999.90
0.56	914.90	962.60	983.60	992.80	996.90	998.70	999.50	999.80	1000.00
0.57	920.50	965.90	985.40	993.80	997.40	998.90	999.60	999.90	
0.58	926.00	969.00	987.00	994.60	997.80	999.10	999.70	999.90	
0.59	931.10	971.80	988.50	995.30	998.10	999.30	999.80	1000.00	
0.60	936.00	974.40	989.80	996.00	998.40	999.40	999.80		

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TABLE 4—Concluded.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Loss in F	Loss on $1000 when C, the competing ability, is damaged from 2 to 10 degrees more than F, the functional ability								
	C^2	C^3	C^4	C^5	C^6	C^7	C^8	C^9	C^{10}
0.61	940.70	976.90	991.00	996.50	998.70	999.50	999.90		
0.62	945.20	979.20	992.10	997.00	998.90	999.60	999.90		
0.63	949.40	981.30	993.10	997.50	999.10	999.70	999.90		
0.64	953.40	983.30	994.00	997.90	999.30	999.80	1000.00		
0.65	957.20	985.10	994.80	998.20	999.40	999.90			
0.66	960.70	986.70	995.50	998.50	999.50	999.90			
0.67	964.10	988.20	996.20	998.80	999.70	1000.00			
0.68	967.30	989.60	996.70	999.00	999.70				
0.69	970.30	990.80	997.20	999.20	999.80				
0.70	973.00	991.90	997.60	999.30	999.80				
0.71	975.70	993.00	998.00	999.50	999.90				
0.72	978.10	993.90	998.30	999.60	1000.00				
0.73	980.40	994.80	998.60	999.70					
0.74	982.50	995.50	998.90	999.80					
0.75	984.40	996.10	999.10	999.80					
0.76	986.20	996.70	999.30	999.90					
0.77	987.90	997.30	999.50	1000.00					
0.78	989.40	997.70	999.50						
0.79	990.80	998.10	999.70						
0.80	992.00	998.40	999.70						

TABLE 5.

Standard of Measurement for Determining Damages to F, the functional ability of the body. (Unit a, factors h, i, k.)

Loss in F, the functional ability of the body, in ankylosis of				Loss in F, the functional ability of the body, in amputation of			
Fingers,		Toes,		Fingers,		Toes,	
Little,	0.01	Little,	0.005	Little,	0.01	Little,	0.005
Ring,	0.02	Fourth,	0.005	Ring,	0.02	Fourth,	0.005
Middle,	0.02	Middle,	0.005	Middle,	0.03	Middle,	0.01
Index,	0.02	Second,	0.005	Index,	0.04	Second,	0.01
Thumb,	0.03	Big,	0.01	Thumb,	0.05	Big,	0.02
Wrist,	0.10	Ankle,	0.10	Hand,	0.20	Foot,	0.20
Elbow,	0.15	Knee,	0.15	Forearm,	0.25	Leg,	0.25
Shoulder,	0.15	Hip,	0.15	Arm,	0.30	Thigh,	0.30

TABLE 6—STANDARD OF MEASUREMENT FOR LOSS OF SIGHT.

Standard of Measurement for Determining Damages to F, the functional ability of the body, for the Loss of Sight in One Eye. (Unit g, factor w.)

(1) Degrees of Disability		(2) Scientific Standard	(3) Economic Standard	(4) Loss to	(5) Loss to F
Slight loss of sight in one eye.....	1°	from 0.7 to 0.6	from 6/6 to 5/6	1/6	from 0. to 0.03
	2°	from 0.6 to 0.5	from 5/6 to 4/6	2/6	from 0.03 to 0.06
Severe loss of sight in one eye.....	1°	from 0.5 to 0.4	from 4/6 to 3/6	3/6	from 0.06 to 0.09
	2°	from 0.4 to 0.3	from 3/6 to 2/6	4/6	from 0.09 to 0.12
Nearly total loss of sight in one eye.	1°	from 0.3 to 0.2	from 2/6 to 1/6	5/6	from 0.12 to 0.15
	2°	from 0.2 to 0.1	from 1/6 to 0	6/6	from 0.15 to 0.18

Total loss of sight in one eye.....0.18

FOR BOTH EYES.

1° slight loss of sight in one eye with 1° slight loss of sight in the other eye.. from 0. to 0.06
1° slight loss of sight in one eye with 2° slight loss of sight in the other eye.. from 0.03 to 0.09
2° slight loss of sight in one eye with 2° slight loss of sight in the other eye.. from 0.06 to 0.12
1° slight loss of sight in one eye with 1° severe loss of sight in the other eye.. from 0.06 to 0.12
1° slight loss of sight in one eye with 2° severe loss of sight in the other eye.. from 0.09 to 0.15
1° slight loss of sight in one eye with 1° nearly total loss of sight in the other eye ..... from 0.12 to 0.18

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1° slight loss of sight in one eye with 2° nearly total loss of sight in the other eye	from 0.15 to 0.21
1° slight loss of sight in one eye with total loss of sight in the other eye	from 0.18 to 0.21
1° severe loss of sight in one eye with 1° severe loss of sight in the other eye	from 0.12 to 0.18
1° severe loss of sight in one eye with 2° severe loss of sight in the other eye	from 0.15 to 0.21
1° severe loss of sight in one eye with 1° nearly total loss of sight in the other eye	from 0.18 to 0.24
1° severe loss of sight in one eye with 2° nearly total loss of sight in the other eye	from 0.21 to 0.27
1° severe loss of sight in one eye with total loss of sight in the other eye	from 0.24 to 0.27
2° severe loss of sight in one eye with 2° severe loss of sight in the other eye	from 0.18 to 0.24
2° severe loss of sight in one eye with 1° nearly total loss of sight in the other eye	from 0.21 to 0.27
2° severe loss of sight in one eye with 2° nearly total loss of sight in the other eye	from 0.24 to 0.30
2° severe loss of sight in one eye with total loss of sight in the other eye	from 0.27 to 0.30
1° nearly total loss of sight in one eye with 1° nearly total loss of sight in the other eye	from 0.24 to 0.30
1° nearly total loss of sight in one eye with 2° nearly total loss of sight in the other eye	from 0.27 to 0.33
1° nearly total loss of sight in one eye with total loss of sight in the other eye	from 0.30 to 0.33
2° nearly total loss of sight in one eye with 2° nearly total loss of sight in the other eye	from 0.30 to 0.36
2° nearly total loss of sight in one eye with total loss of sight in the other eye	from 0.33 to 0.36
Total loss of sight in both eyes	0.36

NOTE.—This Table 6, Standard of Measurement for Damages to F, the functional ability of the body, for the loss of sight, is confined exclusively to the scientific and economic standard of measurement of central acuity of sight, which is the first and most important indispensable element of vision.

The second indispensable element of sight is the field of vision, which is provided for in Table 6 (a), Standard of Measurement for Damages to F, the functional ability of the body, for the loss of any part of the binocular field of vision. The field of vision embraces half a circle, or 180°, divided into six zones of 30° each. Slight loss of the binocular field of vision embraces its concentric contraction of 30°, or its equivalent in irregular contraction from 180° to 120°. Severe loss of the binocular field of vision embraces its concentric contraction of 60°, or its equivalent in irregular contraction from 180° to 60°. Nearly total loss of the binocular field of vision embraces its concentric contraction of 85°, from 180° to 10°, when it becomes total loss of functions for economic purposes. The damage to F, the functional ability of the body, is the same for the field of vision as for the acuity of vision, as given in Table 6 for these designations, that is, for slight loss of the field of vision it would extend to 0.12; for severe loss of the field of vision it would extend to 0.24, and for nearly total to total loss of the field of vision it would extend to 0.36.

The third indispensable element of sight is the muscular movements of the eyes, which are classified in Table 6 (b), Standard of Measurement for Damages to F, the functional ability of the body, for the loss of the functions of any one or all of the extrinsic and intrinsic muscles of two normal eyes. In complete irremediable paralysis of the external rectus of one eye, causing double vision so the eye had to be excluded from taking part in binocular vision, the damage to F, the functional ability of the body, would be the same as the loss of the sight of that eye, namely, 0.18. In complete paralysis of all the extrinsic and intrinsic muscles of both eyes, the damage to F, the functional ability of the body, would be 0.36.

Provisions are made for all the losses in the field of vision and in the muscular movements, which are readily comparable with the losses in the central acuity of vision.

TABLE 7—STANDARD OF MEASUREMENT FOR THE LOSS OF HEARING.

Standard of Measurement for Determining Damages to F, the functional ability of the body, for the Loss of Hearing in One Ear. (Unit g, factor w.)

(1) Degrees of Disability		(2) Scientific Standard	(3) Economic Standard	(4) Loss to	(5) Loss to F
Slight loss of hearing in one ear	1°	from 0.7 to 0.6	from 6/6 to 5/6	1/6	from 0. to 0.02
	2°	from 0.6 to 0.5	from 5/6 to 4/6	2/6	from 0.02 to 0.04
Severe loss of hearing in one ear	1°	from 0.5 to 0.4	from 4/6 to 3/6	3/6	from 0.04 to 0.06
	2°	from 0.4 to 0.3	from 3/6 to 2/6	4/6	from 0.06 to 0.08
Nearly total loss of hearing in one ear	1°	from 0.3 to 0.2	from 2/6 to 1/6	5/6	from 0.08 to 0.10
	2°	from 0.2 to 0.1	from 1/6 to 0	6/6	from 0.10 to 0.12
Total loss of hearing in one ear					0.12

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FOR BOTH EARS.

1° slight loss of hearing in one ear with 1° slight loss of hearing in the other ear	from 0. to 0.04
1° slight loss of hearing in one ear with 2° slight loss of hearing in the other ear	from 0.02 to 0.06
2° slight loss of hearing in one ear with 2° slight loss of hearing in the other ear	from 0.04 to 0.08
1° slight loss of hearing in one ear with 1° severe loss of hearing in the other ear	from 0.04 to 0.08
1° slight loss of hearing in one ear with 2° severe loss of hearing in the other ear	from 0.06 to 0.10
1° slight loss of hearing in one ear with 1° nearly total loss of hearing in the other ear	from 0.08 to 0.12
1° slight loss of hearing in one ear with 2° nearly total loss of hearing in the other ear	from 0.10 to 0.14
1° slight loss of hearing in one ear with total loss of hearing in the other ear.	from 0.12 to 0.14
1° severe loss of hearing in one ear with 1° severe loss of hearing in the other ear	from 0.08 to 0.12
1° severe loss of hearing in one ear with 2° severe loss of hearing in the other ear	from 0.10 to 0.14
1° severe loss of hearing in one ear with 1° nearly total loss of hearing in the other ear	from 0.12 to 0.16
1° severe loss of hearing in one ear with 2° nearly total loss of hearing in the other ear	from 0.14 to 0.18
1° severe loss of hearing in one ear with total loss of hearing in the other ear.	from 0.16 to 0.18
2° severe loss of hearing in one ear with 2° severe loss of hearing in the other ear	from 0.12 to 0.16
2° severe loss of hearing in one ear with 1° nearly total loss of hearing in the other ear	from 0.14 to 0.18
2° severe loss of hearing in one ear with 2° nearly total loss of hearing in the other ear	from 0.16 to 0.20
2° severe loss of hearing in one ear with total loss of hearing in the other ear.	from 0.18 to 0.20
1° nearly total loss of hearing in one ear with 1° nearly total loss of hearing in the other ear	from 0.16 to 0.20
1° nearly total loss of hearing in one ear with 2° nearly total loss of hearing in the other ear	from 0.18 to 0.22
1° nearly total loss of hearing in one ear with total loss of hearing in the other ear	from 0.20 to 0.22
2° nearly total loss of hearing in one ear with 2° nearly total loss of hearing in the other ear	from 0.20 to 0.24
2° nearly total loss of hearing in one ear with total loss of hearing in the other ear	from 0.22 to 0.24
Total loss of hearing in both ears	0.24

TABLE 8—STANDARD OF MEASUREMENT FOR THE LOSS OF SMELL.

Standard of Measurement for Determining Damages to F, the functional ability of the body, for the Loss of Smell. (Unit g, factor w.)

(1) Degrees of Disability	(2) Scientific Standard	(3) Economic Standard	(4) Loss to	(5) Loss to F
Slight loss of smell.	1° from 0.7 to 0.6	from 6/6 to 5/6	1/6	from 0. to 0.02
	2° from 0.6 to 0.5	from 5/6 to 4/6	2/6	from 0.02 to 0.04
Severe loss of smell.	1° from 0.5 to 0.4	from 4/6 to 3/6	3/6	from 0.04 to 0.06
	2° from 0.4 to 0.3	from 3/6 to 2/6	4/6	from 0.06 to 0.08
Nearly total loss of smell	1° from 0.3 to 0.2	from 2/6 to 1/6	5/6	from 0.08 to 0.10
	2° from 0.2 to 0.1	from 1/6 to 0	6/6	from 0.10 to 0.12
Total loss of smell				0.12

FOR THE LOSS OF TASTE.

(1) Degrees of Disability	(2) Scientific Standard	(3) Economic Standard	(4) Loss to	(5) Loss to F
Slight loss of taste.	1° from 0.7 to 0.6	from 6/6 to 5/6	1/6	from 0. to 0.01
	2° from 0.6 to 0.5	from 5/6 to 4/6	2/6	from 0.01 to 0.02
Severe loss of taste.	1° from 0.5 to 0.4	from 4/6 to 3/6	3/6	from 0.02 to 0.03
	2° from 0.4 to 0.3	from 3/6 to 2/6	4/6	from 0.03 to 0.04
Nearly total loss of taste	1° from 0.3 to 0.2	from 2/6 to 1/6	5/6	from 0.04 to 0.05
	2° from 0.2 to 0.1	from 1/6 to 0	6/6	from 0.05 to 0.06
Total loss of taste				0.06

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FOR THE LOSS OF FEELING.

(1) Degrees of Disability	(2) Scientific Standard	(3) Economic Standard	(4) Loss to	(5) Loss to F
Slight loss of feeling	1° from 0.7 to 0.6	from 6/6 to 5/6	1/6	Depends upon the extent of the area involved and the functions of the part or parts which have lost the sense of feeling.
	2° from 0.6 to 0.5	from 5/6 to 4/6	2/6	
Severe loss of feeling	1° from 0.5 to 0.4	from 4/6 to 3/6	3/6	
	2° from 0.4 to 0.3	from 3/6 to 2/6	4/6	
Nearly total loss of feeling	1° from 0.3 to 0.2	from 2/6 to 1/6	5/6	
	2° from 0.2 to 0.1	from 1/6 to 0	6/6	
Total loss of feeling				do.

TABLE 9—EVOM TABLE.

Based on the premises that F, the functional ability, multiplied by T, the technical ability, multiplied by C, the competing ability, equals to E, the earning ability of a person, and that the gross economic value of man is the present value of all his earnings for a prospective working life, and that the net economic value of a man is the present value of all his earnings less the present value of all his personal expenses for his prospective life.

The money values here given may be used either for the gross, or the net, economic value of man, depending upon whether $1 per day is the gross, or the net, income per day for three hundred days of the year, namely $300 per year, for a prospective working life.

This table is computed on a 3½ per cent. discount basis.

At the Age of Birth	Money Value	Annual Increase	Percentage of Increase in 5 years	No. Living at	No. Deaths in 5 yrs.	Percentage of Death in 5 years
	133.29			513		
5	1388.44	251.03	911.31	372	141	27.48
10	2900.98	302.50	108.94	355	17	4.57
15	4754.26	370.65	63.88	346	9	2.53
20	5797.72	208.69	24.05	335	11	3.17
25	6114.51	63.35	5.46	321	14	4.17
	Decrease	Decrease	Decrease			
30	5985.71	25.76	2.10	307	14	4.36
35	5664.43	64.25	5.36	291	16	5.21
40	5262.30	80.43	7.13	275	16	5.49
45	4784.29	95.62	9.08	257	18	6.54
50	4178.96	121.04	10.57	237	20	7.78
55	3420.67	151.68	18.14	215	22	9.28
60	2413.00	201.52	29.45	189	26	12.09
65	1141.72	254.25	52.68	156	33	17.46
70	19.10	224.73	98.33	118	38	24.35
75	—609.32	125.68	3293.50	79	39	33.05
80	—1017.88	81.71	67.05	44	35	44.30

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APPENDICITIS, CHRONIC, WITH GASTRIC SYMPTOMS.

Chronic appendicitis has been frequently found in association with gastric symptoms. When this association occurs, a gastric or duodenal ulcer may or may not be present, but in all cases investigated by the author the gastric juice yielded abnormal analytical results. The abnormalities may consist of hypersecretion or of hyposecretion both of chloride and pepsin, of the presence of a peptolytic ferment, and of the elevation of the "nitrogen factor." These abnormalities can best be explained as due to toxic substances which act both

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on the stomach and on the appendix. Removal of the appendix does not always relieve or improve the symptoms. Charles Singer (Lancet, December 21, 1912).

CAMPHOR, EFFECTS OF, ON LESSER CIRCULATION.

The author found that intravenous injection of aqueous solutions of camphor caused in the dog a decrease of the blood-pressure in the right ventricle as well as in the carotid artery and induced a pronounced dilatation of the pulmonary vessels. He ascribes the useful therapeutic effects of camphor, *e.g.*, in pulmonary tuberculosis, to an improved circulation through the lung-vessels, which brings about a better nutritive state of the lung-tissue. E. Liebmann (Archiv für experimentelle Pathologie und Pharmakologie, No. 68, 1912).

CARDIOVASCULAR DISEASE, DIET IN.

The main principle of dieting in persons with impaired circulation is regulation of the amount of protein and calories so that the patient has what is required, but has nothing in excess. The ideal diet or the key to an ideal diet is bread and butter, with a certain amount of milk to supply the fluid, and enough cheese to make up the protein requirements, without an excess of carbohydrates or heat units. If a man is fed on bread and butter alone he gets an excess of carbohydrates, which burdens his digestion. It leads to an accumulation of weight and other evils, but if he is given bread and butter in moderation, with cheese to furnish the necessary protein, he gets along perfectly well on this balanced ration. On account of the scurvy question it is necessary to add fruits and green things, but the essential elements may be obtained from cheese, milk, and bread and butter. L. F. Bishop (Medical Record, September 28, 1912).

DIGITALIS, THERAPEUTIC ACTION OF.

As is well recognized, the therapeutic effect of digitalis in auricular fibrillation is so striking as to be practically specific; the rapid, irregular pulse is greatly slowed, and the symptoms display a remarkable improvement, owing to the fact that the slowed heart gains more diastolic rest. Clinical and experimental investigations were carried out by the authors which seemed to throw light on a matter hitherto obscure—namely, the method by which digitalis slows the heart in auricular fibrillation. It was shown that this was not due to the vagoinhibitory effect of the drug, since the injection of atropine did not interfere in any way with the action of digitalis or strophanthin in retarding the quick, irregular pulse of fibrillation. The next question to be answered was whether the theory is correct which ascribes this retardation to the depression of conductivity that digitalis is known to exert; whether it is due to a cutting off at the bundle of His of some of the stimuli which pass over in rapid, irregular series from the fibrillating auricle to the ventricle. The researches, though giving no final answer to this question, went to show that depression of conductivity by digitalis is a vagus effect, and that, as the beneficial action of the drug in auricular fibrillation is due to a direct effect on cardiac muscle, it cannot be wholly ascribed to the cutting off of impulses in the auriculoventricular bundle. The authors think it possible that digitalis reduces the excitability of the ventricular musculature to some extent, and thereby renders it less responsive to the stream of irregular stimuli

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showered down upon it from the fibrillating auricle; but in either case, whether the benefit which patients with auricular fibrillation derive from digitalis be due to depression of conductivity or to lowering of excitability, it is probable that the drug produces those effects indirectly by improving the nutrition of the myocardium through an augmentation of its contractile power. A. R. Cushny, H. F. Marris, and M. D. Silberberg (Heart; Lancet, December 14, 1912).

ESOPHAGEAL CARCINOMA, TREATMENT OF.

The value of hydrogen dioxide in this affection, recently pointed out by Liebermeister, is confirmed by the author. Liebermeister showed by X-ray and pathological studies that absolute stenosis, anatomically speaking, is never present in cancer of the esophagus or cardia. There is almost always a channel permitting the passage of fluids, no matter what the degree of stenosis. Complete obstruction of this channel only occurs when it is occluded by food material not sufficiently divided before swallowing and by the products of decomposition of the necrotic tumor-mass. In these cases 1 dessertspoonful of 1 to 3 per cent. hydrogen peroxide solution is given every hour. In less than twenty-four hours the stenosis is overcome and in a few days the patients, who had previously been completely unable to swallow anything, can eat purées and even solid food. The distressing subjective symptoms simultaneously disappear. The patients may even gain in weight and recuperate so much as to present a normal appearance. One of Liebermeister's patients gained 8½ kilos (18 pounds). The author refers to a case in which 5½ kilos were gained in four weeks. The patient then left the hospital, still taking the peroxide; but later he neglected its use for several weeks, with the result that he was obliged to return to the hospital. Upon resumption of the treatment for two weeks, 6 kilos were gained. The same cycle of events was then repeated, the beneficial effect of the measure being thereby clearly shown. In scirrhous cancers the peroxide produces little or no effect, but in the other types it constitutes one of the best palliative measures now available. S. Fradiss (Progrès médical, July 27, 1912).

FISSURED ANUS, TREATMENT OF.

For some time past the author has been treating the great majority of cases of painful fissure without operation, and most of them have healed. In the examination of these cases the sphincter is found very tightly contracted, so that upon trying to open the anus in order to look posteriorly nothing can be seen of the fissure. In those cases it is necessary to coax the patient to bear down slightly, or, in addition, to blow some orthoform into the opened anus. Anesthesia is soon produced, and, with the patient straining down a little, the part can be coaxed open with the fingers and the lower end of the fissure seen. If the fissure is not associated with a sentinel pile, the treatment adopted by the author is to apply thigenol, a synthetic product similar to ichthyol, on a piece of cotton-wool to the fissure. This does not stain the linen, has no objectionable smell, and does not produce pain when applied to ulcers. To apply it the writer wraps a little wool round a probe, dips it in the preparation, inserts the wool, which remains wrapped round the probe, within the anus, and presses it gently to the ulcer; then with the index finger of the left hand he holds the wool in position and gradually withdraws the probe.

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Another important part of the treatment is to see that the patient's bowels open every day without straining, and that the motions are soft. The patient is required to drink every night a tumblerful of water, either hot or cold, as he wishes, and an hour before breakfast in the morning another tumblerful of water, hot. To insure softness of the motions petrolatum is given in the following formula:—

℞ Tincture of cochineal,
Essence of peppermint, of each, ♏x.
Syrup of glycerin, ʒj.
Soft paraffin, ℥j.

If this is objectionable, it is well to add 20 grains of powdered cocoa. The cochineal and peppermint may then be omitted. If there is a complaint that it is too smooth to the mouth one can add 10 to 20 grains of powdered agar, but the majority of patients take the mixture very well. It should be taken four times a day, a teaspoonful each time. These patients having beforehand been very constipated, it is necessary to give them some aperient in addition. Confection of senna may be prescribed—½ to 1 teaspoonful. After the bowels have acted, the patient is instructed to wash the parts with water, to dry afterward with cotton-wool, and then apply some unirritating ointment, such as eucalyptus. Many of these cases will heal with the above treatment.

Some patients, however, come with violent spasm of the sphincter, with a sentinel pile, and in very great pain. These are given gas, trussed up with a towel, and the sphincter thoroughly dilated with the fingers for about a minute. The sentinel pile is then thoroughly removed with forceps, and, if there is in addition a polypus, the latter rapidly ligatured. Aslett Baldwin (Clinical Journal, November 27, 1912).

GELATIN AND BLOOD VISCOSITY.

Having observed the existence of a certain relationship of the viscosity of the blood to hemophilia and anemia, the author undertook to ascertain how the viscosity was influenced in cases of severe hemorrhage by the administration of gelatin. He gave the gelatin internally in a 3 per cent. solution and hypodermically in a sterilized 10 per cent. solution, and estimated the viscosity of the blood before and at twenty-four-hour intervals after the administration of the remedy. It was found that gelatin causes an increase in the viscosity, especially when given under the skin. Thus, in a case of hemoptysis the internal administration of 200 c.c. causes the viscosity to rise in ten days by 0.6 in relation to the original value, while the injection of 40 c.c. of sterile gelatin solution caused it to rise in twenty-four hours by 1.4. In the author's opinion, gelatin given hypodermically is less exposed to fermentative process than when it is given by the mouth. The blood is also increased by the giving of gelatin, though the pulse rate is variable. Increase in the specific gravity of the blood is one of the factors in the hemostatic effect of gelatin. Cmunt (Medizinische Klinik, August 25, 1912).

GUNSHOT WOUNDS, TREATMENT OF.

The author advises the application of steaming towels wrung out in water hot as can be borne during a period of thirty minutes night and morning before the wound is dressed in these cases. This is continued until all inflammation subsides.

In 2 cases of pistol-shot wound treated by the writer, it appeared to him that septic temperatures, which at no time developed in either one of the cases, were prevented by the active, continued

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use of the cell-stimulating hot-water applications. F. Griffith (New York Medical Journal, November 2, 1912).

HEMOPTYSIS, TREATMENT OF.

As hemoptyses are sometimes preceded by a sense of tightness in the chest or by the presence of blood-streaked sputum, it may be possible to prevent their occurrence by insisting on absolute rest and by the administration of a drug with the view of decreasing vascular pressure. Either of the following may be used:—

℞ Spts. glycerylis nitratis, ♏xv.
Aquæ, ʒij.

Or,

℞ Sodii nitritis, gr. xv.
Aquæ, ʒij.

A teaspoonful of either of the above may be given every four hours for two or three days.

More commonly, perhaps, the patient receives no warning and the physician is summoned to treat an active hemorrhage. The patient must be put to bed and all unnecessary movements on his part avoided. A comfortable position should be assumed; usually the semirecumbent posture (with one or two pillows under the head) is best. The patients should be assured in a few words that there is little cause for apprehension. The most rapid and effective means of securing vasodilation is to break one of the little "packages" of amyl nitrite and hold it for several minutes under the patient's nostrils. The hemoptysis then frequently comes to an end within a few minutes. Whether or not this occurs, the patient should receive atropine, gr. $\frac{1}{50}$ hypodermically, to be repeated two or three times within the next twenty-four hours.

In place of atropine some prefer the use of nitroglycerin. This may be administered hypodermically in doses of gr. $\frac{1}{100}$, repeated at short intervals, at first every half-hour or hour, for three or four doses, later less frequently. After vasodilation has been obtained, more permanent effects may be secured by the use of sodium nitrite, gr. j, every three or four hours.

Morphine should not be resorted to as a routine measure. It is indicated if the cough be troublesome, but its field of greatest usefulness is in those cases where excessive nervous irritability exists.

The procedure of tying off the extremities by means of bandages applied to the middle of the arms and thighs is especially serviceable in large hemorrhages where there is danger of exsanguination.

Coleman recommends 5 drops of adrenalin chloride, or 3 grains of the suprarenal extract, every three or four hours. Neither its action nor that of the recently introduced pituitary extract has been satisfactorily explained. Thompson Frazer (Medical Record, November 9, 1912).

INFLUENZA, TREATMENT OF.

The author is convinced that depressant antineuralgics have no place in the treatment of influenza. They tend to the production of general enfeeblement and lowered vitality in a disease which is characterized primarily by great cortical and bulbar depression, and which tends to become chronic in proportion to the degree of immediate resistance.

The symptomatic treatment of the disease should be made subsidiary to the destruction of the bacillus of Pfeiffer by local treatment of the air passages, and to conservation of vitality and resistance by environment and natural agents, *i.e.*, ventilation, alimentation, and elimination.

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The following procedure has proved satisfactory in the local treatment:—

In the morning:—

1. Thoroughly cleanse the nose and throat with a spray of Dobell's solution or 1:400 phenol solution at a temperature of 85° to 90° F.

2. Swab the nose and throat with

Balsami Peruviani, gr. x (0.6 Gm.).
Ichthyolis, gr. v (0.3 Gm.).
Glycerini, q. s. ad f℥ij (60 c.c.).

In the evening:—

1. Repeat the spray of Dobell's or phenol solution.

2. Have the patient inhale for one-half hour creosote, 8 c.c. to a quart of water.

3. Swab the nose and throat with epinephrin.

4. Fifteen minutes later swab with argyrol, 10 per cent.

Hydrotherapy is of inestimable value in all cases of chronic influenza, acting as tonic, stimulant, eliminant, and by enhancing phagocytosis.

Patients with prolonged indisposition and great depression accompanied by persistent cough, excretion of Pfeiffer's bacillus, and irregular recurrence of fever with exacerbation of acute attacks should be recommended to a climate which shows only slight changes in temperature and barometric pressure, and where relatively clear and sunshiny days predominate. Tropical or subtropical climates are bad for influenza by lowering resistance and increasing local congestion. Glenn I. Jones (Journal of the American Medical Association, October 5, 1912).

INTRAOCULAR INFLAMMATION, TREATMENT OF ACCESSORY SINUSES IN.

The author is convinced that chronic frontal-sinus and ethmoidal infection is the sole cause of many so-called "idiopathic" cases of choroiditis and retinitis. In these patients he has found the following treatment of special value: A tampon, of such length and size as will fit snugly between the middle turbinated body and the septum and extend from the exterior portion of the nose to the sinus posteriorly, is first saturated with an aqueous solution of argyrol, 40 grains to the ounce, and then introduced. Through capillary attraction, it depletes the proximate soft tissues and drains the ethmoid cells and other sinuses. To drain the maxillary sinuses, the tampons should be placed under the scroll of the middle turbinate and above the upper part of the inferior turbinate. It is the author's custom to allow them to remain *in situ* for from twenty minutes to one hour. The first effect is congestion of the conjunctiva, sneezing, and nasal discharge. On removing the tampons when infection is present, they are found to be bleached on the upper surface, and sometimes throughout, the bleaching being in proportion to the amount of infection. The author has treated by this method 5 severe cases of idiopathic retinochoroiditis in which blindness threatened, and in every case obtained splendid results. He has also treated 26 cases of iritis, and marked improvement followed in all except 2, in which syphilis was an etiological factor. By far the largest class of cases treated, however, was that of obscure frontal headache, variously diagnosed as malarial, gastric, refractive, etc. W. S. Manning (Lancet-Clinic, November 30, 1912).

INTRAVENOUS ETHER-SALT SOLUTION ANESTHESIA.

The author describes an apparatus for this purpose in which the temperature of the solution is easily regulated by means

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of an electric bulb, all gas bubbles are isolated from the solution before entering the vein, and all danger of infection is avoided. Cold sterile physiological salt solution is filtered through sterile filter paper into a sterilized bottle up to a graduated mark at 2325 c.c., and 175 c.c. of ether are then added, making 2500 c.c. After being heated in a copper coil, the solution passes through a "gas separator" and reascends to the original container, whence it is drawn off by a short tube into the vein.

The average requirement for an operation lasting one or two hours is 1 to 1½ liters of the ether-salt solution, and 2 liters have been given with absolutely no untoward effects. The solution enters the vein at a temperature of 38° to 40° C., and with approximately a 5 per cent. concentration of ether.

The patient goes to sleep on 250 to 500 c.c. in from eight to ten minutes with very little and often no physical excitement. The jaw and tongue must be kept forward as with any general anesthetic. As soon as complete relaxation is obtained the solution may be kept shut off over half the time. When the patient shows signs of restlessness, about 25 c.c. of solution give a very prompt response. This advantage over the inhalation method is due to the fact that the latter depends for its efficiency upon the patient's respiration, which is inhibited at this stage (when the patient is coming out).

Respiration is quiet and not hindered by the accumulation of mucus in the trachea. The pulse is increased, as during ether inhalation, but apparently not so much. The blood-pressure, taken at ten-minute intervals, does not show a rise in proportion to the amount of liquid injected. Postanesthetic vomiting is much less marked than after the inhalation method.

The following objections to the method might be raised: (1) Infection. Any careful operator should be able to eliminate this factor. The repeated heating of the salt solution before using and the use of a large container to obviate the second handling of the solution are strong safeguards. (2) Embolism. Gas embolism is prevented by the use of the separating device, and the possibility of volatilization after entering the blood-vessels is reduced by the admixture of unsaturated blood-plasma, thus reducing the vapor tension. Blood-clot embolism from clotting of blood in the cannula when the solution is not flowing may be obviated by a little care in washing out the cannula occasionally. (3) Overfilling of the circulatory system. Crile recommends the introduction of 1 liter in the treatment of shock, and it is known that the elasticity of the arteriolar system renders it very accommodating to excess of fluid. The author's observations did not show any marked increase of intravascular pressure. (4) Hemolysis. No hemoglobinuria was observed and blood examinations did not reveal laking of the erythrocytes.

The method has several points to commend it for selected cases, viz.: (1) the absence of disagreeable sensations; (2) the absence of mucous secretions from the respiratory passages; (3) the decreased postanesthetic vomiting; (4) the removal of the anesthetist from the sterile field in operations about the head and neck; (5) the ease with which the depth of anesthesia can be controlled; (6) the relatively small amount of ether which the patient receives.

The series operated by the author included the following major operations: extensive repair of male perineum, de-

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compression, panhysterectomy, epithelioma of the lip with plastic work, brain tumor, hernia. L. W. Jenkins (Northwest Medicine, December, 1912).

LEPROSY, SALVARSAN IN.

The author found that the administration of salvarsan resulted in clinical improvement in 4 of 5 patients treated. The other case ended fatally from the result of accidental burns before observations could be completed. The 2 cases in which the disease was least advanced showed the best results. One of the controls remained unchanged in condition and the other grew steadily worse and finally died. In 1 case *Bacillus leprœ* disappeared from the nasal secretion after treatment. Four cases showed partial or complete resolution of the nodules of tissue examined after treatment.

It may therefore be concluded that, in cases where the patient is not too weakened from the disease, salvarsan may be administered without harm. Some improvement may be expected, especially in early cases. There is no evidence, however, that such effect of the drug is in any way specific or permanent. Creighton Wellman (New York Medical Journal, November 16, 1912).

LEUKEMIA, BENZOL IN.

Good results are reported by the author in this affection by the internal administration of capsules each containing 0.5 Gm. (8 minims) of pure benzol (benzene, not benzin) and a like amount of olive oil. At first 4 capsules are given daily, after meals, then 2 capsules three times daily, later four times, and finally five times daily. The cases in which the agent was tried included 6 of myeloid leukemia, 1 of Hodgkin's disease, and 1 of polycythemia. The results are illustrated in the statement that within two months the leucocytic count in 2 of the cases was reduced from 360,000 to 9600 and from 240,000 to 8000, respectively. After a temporary increase, the white cells gradually diminish to normal, while the spleen and lymphatic glandular enlargements also recede. The cases are still too recent to warrant any statement as to the permanence of the effect. The myelocytes are but little influenced. Fever generally disappears, even where antipyretics have previously failed to act, and the general condition is improved. It is to be especially noted that the fall in the leucocyte count should not be looked for until a few weeks after the treatment has been begun. The method is of value because it is effective even where other measures, including X-ray treatment, have been unsuccessful. Unpleasant by-effects, where they occur, consist of a burning sensation in the stomach, lack of appetite, vertigo, and irritation of the respiratory passages, but these symptoms are only of short duration. G. Kiralyfi (Wiener klinische Wochenschrift, August 29, 1912).

MARASMUS, TOPICAL USE OF CODLIVER OIL IN.

In infant feeding one is apt, the author points out, to think only of the food, its digestibility, and the infant's power to digest, and to neglect the part a failure to assimilate may play. In cases of marasmus the latter factor enters largely, for it is not uncommon to find, especially in those with acquired marasmus, fairly digested stools. In all, however, whether there be much, little, or no digestion, after a shorter or longer stay in the duodenum the food is hurried by rapid peristalsis through the intestines. On the basis of the lack of assimilative power as the largest factor,

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the author advises the following treatment in marasmus:—

The child is wrapped in oil-soaked flannel extending from the armpits to the iliac crests. Over this is placed oiled silk. This flannel is removed, and, after washing the skin with soap and water, reapplied, at intervals of twelve hours. Experimenters claim that the absorbing property of the skin is slight. This is true when the effort is made to rub the oil through, but the author has found that, with the skin thus constantly bathed in oil and with the surface heat confined by the oiled silk, from 30 per cent. to 50 per cent. by weight of the oil disappears.

By mouth nothing but water is given, and this in quantity enough to supply vessels and tissues abundantly, and to aid the kidneys to do the extra work required owing to the shutting off of so much skin.

The results consist of a rise in temperature, sometimes rapid, sometimes slow, followed by evidences of increase in fat and water content in the body. The skin begins to lose its dryness and wrinkles to disappear. Later, at variable intervals, an increase in weight, often considerable, is noted.

No attempt to feed by mouth should be made until the temperature has been at normal for a number of days and the skin shows a considerable increase in fat and water content. The length of time of application, in the author's cases, was from one week to two and one-half months.

In twenty-five years, of 36 premature infants, 30 were saved, or 83 per cent. Of 52 infants with congenital marasmus, non- syphilitic or tuberculous, 100 per cent. recovered. Of 220 infants with acquired marasmus, 206 recovered, or 93 per cent. T. N. Gray (Journal of the Medical Society of New Jersey, January, 1913).

NEOSALVARSAN.

This product is better borne, *at the time of injection,* than salvarsan. Later, too, unpleasant effects, such as fever, nausea, vomiting, headache, and general lassitude, are less often observed with the new remedy than with the old. Nevertheless, modes of procedure in which advantage is taken of the greater *immediate* tolerance of the system to neosalvarsan to inject excessively large doses of the latter are to be condemned, as untoward happenings have occurred as a consequence, some of which have been quite serious. Thus, the author reports a case in which the administration of 1.5 Gm. of neosalvarsan in 2 doses was followed by paraplegia, the condition later becoming so grave as to endanger the patient's life. For the present at least, no attempt should be made to improve upon the results obtained with salvarsan by increasing the dosage of neosalvarsan. Even with moderate doses of the latter, untoward results have been witnessed. The degree of frequency with which these occur will eventually lead to a decision upon the value of this drug.

In point of general efficiency, neosalvarsan is comparable with salvarsan. In view of the greater immediate tolerance to it, it may be employed in preference to salvarsan in cases where the latter is badly borne, as well as in cases of tabes, general paralysis, arteriosclerosis, cardiac disease,—in brief, in all patients in whom too marked a reaction of the organism is to be avoided and where only small doses of the drug are indicated.

The method of choice in administering neosalvarsan, as with salvarsan itself, is

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still being studied. Combined mercurial and arsenical treatment already seems, however, to be the best procedure in the case of each of the drugs. Bayet (Académie Royale de Médecine de Belgique; Presse médicale, December 7, 1912).

OTITIS MEDIA PURULENTA, TREATMENT OF.

In the treatment of this condition the author has come to place chief reliance upon a mercuric chloride solution, though cases were met with occasionally in which a boric acid solution proved more efficacious. As to the method of employment, the boric acid is used in saturated solution, the bichloride, at the outset of the treatment, in the strength of 1:8000, though not infrequently this is increased to 1:4000. If the discharge is copious, the ear is thoroughly but gently syringed or douched with whichever solution is employed, and, even at the beginning of the treatment, it has seldom been found necessary to do this oftener than two or three times daily.

When the discharge is scanty, the ear is cleansed with the cotton mop. If the acute stage of the attack has subsided sufficiently to make it permissible, the discharge in the tympanic cavity is driven out by the Valsalva method, or by the Politzer bag; the ear is again wiped out, and a sufficient quantity of the warmed solution is poured into the ear to nearly fill the canal. Before this is done the patient is placed in such a position, with the head inclined, that the ten minutes, at least, during which the solution should remain in the ear shall not prove too irksome. The solution is then allowed to run out, the ear dried, not very thoroughly, and the orifice of the meatus closed with a soft plug of absorbent cotton. How frequently this application is made depends upon the effect produced, but it is never oftener than once in twenty-four hours. The author does not use a gauze wick.

There are few cases, even of chronic otorrhea, that seem to call for other treatment—apart, of course, from operative procedures—than the employment of the bichloride solution; but exceptionally, especially when there is extensive destruction of the drum-head, the insufflation of boric acid, or boric acid and aristol or oxide of zinc, equal parts, has been found efficacious when the mercuric solution has failed.

Since the great majority of cases of acute otitis media, if not purulent from the outset, become so, in spite of aseptic precautions, after the membrane is incised or a spontaneous rupture has occurred, it is, in the author's opinion, wise in all cases to begin the antiseptic treatment without loss of time or waiting for further developments. Where there is perforation, it can be shown in the majority of instances that the fluid used as described actually reaches the middle-ear cavity. When the swelling and inflammation become less marked, patients not infrequently, indeed, complain of the taste of the solution. Bichloride in the strength employed is not irritating. Samuel Theobald (Transactions of the American Otological Society, vol. xii, part 3, 1912).

PNEUMONIA, SODIUM CITRATE IN TREATMENT OF.

The author points out that in pneumonia the following conditions are present: (1) obstruction to the circulation of blood through the hepatized lobe or lobules; (2) a somewhat high degree of viscosity and coagulability of the blood; (3) a diminished alkalinity of the blood

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due to the rapid disappearance of sodium chloride and other salts.

The obstructed circulation is partly due to the exudate about the arterioles and capillaries, which compresses them and reduces their lumen, and partly to the viscosity of the blood. As a result the leucocytes and antitoxins with which the blood is charged do not gain access to the diseased tissues. This condition persists until the exudate or coagulum in the hepatized area undergoes some change of its own through contraction of the fibrin, or solution or digestion by the alexin in the blood-serum.

While viscosity and coagulability are not the same thing, they are closely related. Viscosity, due to internal or molecular friction, when carried to its highest point is coagulation, although coagulation is an additional fermentation process. Means that reduce viscosity also delay coagulation. Both conditions are probably dependent in part upon the action of the calcium salts in the serum, which action is inhibited by the alkaline citrates.

In a healthy adult an actual test showed that coagulation was greatly delayed and fluidity as markedly increased by the administration of 15 grains of sodium citrate every three hours.

On the basis of the foregoing facts the author is led to emphasize the necessity that in pneumonia: (1) sodium chloride and possibly some other alkaline salts should be supplied to the system in about the normal daily amount of 240 grains, with the diet or otherwise if necessary; (2) sodium citrate should be given in sufficient dosage to render the blood noncoagulable and of the greatest possible fluidity. He was enabled by clinical observations to show clearly the advantages of administering this substance. Sodium citrate does not disturb the gastric functions or appetite, and might be given in doses of 1 dram every two hours if that much were considered necessary. It may be administered with a little citric acid or in lemonade. The proper dose for an adult was found to be from 30 to 40 grains every two hours. For children the dose should be calculated from the larger amount. Active catharsis should be established at the beginning of the treatment.

In most cases, especially in children, the temperature, pulse, and respiration, under the influence of the citrate, fall to normal within twenty-four hours. The clearing-up process in the lung is completed a little later, and until it is completed the citrate must be continued at the same dosage. By this method of treatment the lung seems to escape the third stage, the exudate being absorbed without change. W. H. Weaver (New Orleans Medical and Surgical Journal, September, 1912).

PULMONARY TUBERCULOSIS, ALBUMIN IN SPUTUM IN.

It is pointed out by the author that the quantitative examination of albumin in the sputum does not take much time and is easy to apply. In doubtful cases of pulmonary tuberculosis the presence of albumin in the sputum with a positive von Pirquet reaction would justify one in making a positive diagnosis.

The technique is as follows: Patients are instructed to furnish about 20 c.c. of sputum as free from saliva as possible. The sputum is measured, and a 3 per cent. acetic acid solution slowly added while the sputum is agitated until the mucin is coagulated. Then enough distilled water is added to make a 33⅓ per cent. dilution of the sputum. After thoroughly shaking, this is filtered through several layers of gauze, a few

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drops of the acetic acid solution are added to the filtrate to insure complete precipitation of the mucin, and this mixture filtered through filter paper. A part of the filtrate may be tested by any of the tests for albumin. If more than a trace occurs, a quantitative test for albumin is made with Esbach's tube in the same manner as a quantitative test for albumin in the urine and the reading on the tube multiplied by 3, as this is the dilution of the sputum. It should be remembered that if much saliva is present with the sputum for examination this saliva may give a slight albumin reaction.

The sputa of 168 patients were examined by the author. It was found that all patients with active pulmonary tuberculosis give a postive albumin reaction. Arrested cases never have more than a trace of albumin in the sputum, or they may give a negative reaction. Most active cases, whether incipient, moderately advanced, or far advanced, show 0.2 per cent. or more of albumin. Improved (slightly active) cases usually have less than 0.2 per cent. albumin. B. O. Works (Journal of the American Medical Association, October 26, 1912).

SODIUM CINNAMATE.

Hypodermic injections of this substance are highly valued by the author in all cases in which a general tonic effect is required. He has found it distinctly superior to the cacodylates, but points out the fact that the doses of sodium cinnamate hitherto recommended have been altogether too small. As an initial dose he injects the contents of a 5-c.c. (1¼ dram) ampoule, including 0.5 Gm. (⅝ grain) of the cinnamate. This is rapidly increased by one-half, then doubled, the bulk of the solution, however, being kept the same. The latter amount of the drug—0.1 Gm.—can be injected daily without the least danger, and no intolerance was observed in over 300 cases. The beneficial effects promptly assert themselves; the patients remark of their own accord on the improvement in their condition. Jean Laborde (Paris médical, July 13, 1912).

SPINAL ANESTHESIA.

The author presents a report on 400 operations conducted under stovaine-glucose spinal analgesia. The series comprised 212 abdominal and 188 non-abdominal operations. There was in the series no case of failure to enter and inject the spinal sac. The patients were mostly young soldiers, and the author had had the advantage of three years' previous experience with the procedure.

There were only 2 cases where a general anesthetic was employed to supplement the spinal injection.

The height and duration of the analgesia that one may expect to obtain after a given injection can be readily estimated beforehand with comparative certainty by the use of an injection compound of a higher specific gravity than the spinal fluid. The solution containing 5 per cent. stovaine and 5 per cent. glucose is heavier than cerebrospinal fluid; it has a specific gravity of 1023, that of the cerebrospinal fluid being 1007. This means that, by slightly elevating the pelvis of the patient before injection in the lateral position, the solution can be localized to any given segment of the spinal cord, as the solution will flow to the most dependent part of the curve of the spinal canal and the height of the analgesia can thus be determined before any injection is given.

As regards the duration of the analgesia, the author found that, with trifling variations, an injection of 0.9 c.c. of this

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solution, which contains 4½ cg. of stovaine, maintains analgesia to the level of the umbilicus for forty-five minutes. This gives ample time for operations on herniæ and appendicitis. The amount of the solution used can be increased, and in 1 case in the series the injection of 1.2 c.c. (or 6 cg. of stovaine) was ample for the performance of the operation of gastrojejunostomy. This was a severe test of the method, and its success a striking demonstration of its potentialities, as complete analgesia was maintained at the level of the xiphisternum for the forty minutes required to complete the operation.

The after-effects of injection in the series were fairly constant. When the analgesia extended above the umbilicus, in 24 per cent. of the cases slight faintness or nausea came on from ten to fifteen minutes after injection. This passed off in ten minutes, when the patients became drowsy and comfortable. On returning to the ward 7 per cent. vomited; among these were several cases of abdominal trouble who had been vomiting before operation. Headache was reported in 40 per cent. of the cases. It was usually mild and seldom interfered with the patient's sleep. In 35 per cent. of the cases there was no discomfort of any kind either during or after operation.

Life-saving operations can be performed under spinal analgesia in cases where chloroform or ether is inadmissible, such, *e.g.*, as amputations of the leg for diabetic gangrene or in a patient with advanced cardiac disease. With stovaine analgesia there is an absence of shock during operation which is not obtained under inhalation or any other form of anesthesia. Also, the muscular relaxation is so complete that much less time is required to complete an operation than if chloroform were used. To obtain the best results the operator must have experience of the technique. It is among the first 50 or 100 cases injected that incomplete analgesia or other troubles are likely to occur. J. W. H. Houghton (Lancet, October 12, 1912).

TUBERCULOSIS, TREATMENT OF COUGH IN.

The writer has seen counterirritation with mustard act happily in the treatment of night cough in tuberculosis. One patient in particular is recalled who went to sleep with a mustard plaster over the upper part of the right lung. While she slept, the irritant worked, shifting its position and producing an angry-looking blister; but the cough ceased for several weeks afterward.

The expectorants and cough syrups, so much decried in some quarters, are often capable of affording marked relief in these cases. There is a class of drugs which has fallen too much into disrepute: balsam of copaiba, oil of sandalwood, cubeb, terpin hydrate, and the fluidextracts of yerba santa, saw palmetto, wild cherry, and other similar drugs. Those who give them a faithful trial will sometimes be rewarded by seeing them materially alleviate the bronchial irritation of phthisis. They are not suited to delicate stomachs, it is true, but they should not be relegated to oblivion. A soft elastic capsule containing 1 minim of pure beechwood creosote, 5 minims of oil of sandalwood, and 2 grains of terpin hydrate given four or five times daily may be of decided benefit. W. S. Gordon (Merck's Archives, December, 1912).

WOUNDS AND FRACTURES, SUGGESTIONS ON TREATMENT OF.

A scalp wound should be carefully disinfected. For some distance around it

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the scalp should be shaved, either dry or wet with alcohol. After the area has dried it should be painted with tincture of iodine, and the surplus washed off with alcohol. In extensive lacerations and contusions the patient should be anesthetized in order to carry out the technique. For suturing these wounds, figure 8 sutures not only make ideal closures, but also control hemorrhage. However, the suture should not be too tight, or local necrosis will be produced. Where the parts are badly torn, free drainage should be provided; the stitches should not be too close together.

In contusions of the head sufficient to produce a hematoma, and where there is doubt about a fracture of the skull, the bone should be exposed under strict asepsis. In all fractures of the skull the patient should be given 40 to 60 grains of hexamethylenamine a day.

Wounds of the face and hands should be closed with subcuticular stitches, especially in women. To prevent subsequent stretching of the scar, the superficial fascia should be closed with interrupted fine silk sutures before applying the subcuticular suture.

Fracture of the hip occurring in old people should be treated as a simple contusion. No appliance that keeps the patient in bed should be used. The patient should be made to sit up in bed every day as soon as the tenderness has subsided. He should be placed in a roller chair. To keep these patients flat on their backs means femoral thrombosis, pneumonia, and death.

In a Colles fracture the future usefulness of the hand depends upon perfect reduction. In robust subjects general anesthesia will be required. After reduction the forearm should be encased in anteroposterior plaster-of-Paris splints, the hand being well flexed and the splints not extending beyond the metacarpophalangeal articulation. This enables the patient to use the fingers freely and prevents the stiffness that followed the old plan of treatment. The bandage should be removed once a week and the parts thoroughly massaged.

Where difficulty is experienced in maintaining good apposition in fractures of the metacarpus, metatarsus, and phalanges, the fracture should be exposed under rigid asepsis, holes drilled in the bone, and the bone sutured with kangaroo tendon or 30-day chromic catgut. In all fractures, skiagraphs should be taken after reduction has been accomplished in order to determine the accuracy of apposition.

In injuries to the soft parts of the hand, the site is usually soiled with grease and dirt. The hand should be quickly cleansed by immersing it in a basin of gasolene, and after the gasolene has evaporated the parts sterilized with tincture of iodine and alcohol.

As no flexor tendon is inserted into the second phalanx, it is necessary to suture the ends of the extensor and flexor tendons over the end of the bone, where an amputation is done through the second phalangeal articulation. Where this cannot be done, the flexor tendon should be sutured to the periosteum of the second phalanx; otherwise the phalanx remains practically useless. Where there is extensive destruction of the tendon, the author urges the practice of filling the gap with a suture of fine silk; it is claimed that in time the silk becomes encapsulated with fibrous tissue and a new tendon is formed. W. W. Harper (International Journal of Surgery, October, 1912).

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Clinical Summary

Practical hints from articles and abstracts that have appeared in the Monthly Cyclopedia and Medical Bulletin during the current year.

Albuminuria. TREATMENT. Prophylactic doses of Roux's antidiphtheritic serum in 128 cases of scarlet fever found to lower greatly frequency of albuminuria in these cases. Anaphylactic effects extremely rare with this serum. In all cases of albuminuria originating from throat inflammation, as well as in albuminuria in general where other measures have proven ineffective, the serum should be given hypodermically in doses of 10 c.c. (2½ drams) every three or four days. *Galliot.* Page 36

Anemia. TREATMENT. Administration of olive oil and glycerin, equal parts, in gradually increasing doses two hours after each meal considered a valuable measure. *Bram.* 47

Appendicitis, Acute. TREATMENT. After operation in children: 1. Give warm saline solution by rectum, 8 to 10 ounces every two or four hours; administer slowly with catheter and funnel. 2. Feed with a decoction of crushed raisins, alternated with albumin water. 3. Open bowels as soon as possible. If no normal movement within twenty-four hours, give glycerin enema; use syrup of senna as routine aperient. *Stiven.* 37

Arthritis, Chronic. TREATMENT. Certain joint cases, rebellious to all other treatment, can be arrested by proper diet combined with colonic lavage. Breakfast: Cereal, small amount; toast with butter; imitation cereal coffee. Between breakfast and lunch: Buttermilk, 2 glasses; water, 1 glass. Lunch: Clear soup (or lettuce or spinach); 1 roast potato; 2 slices toast; imitation coffee. Between lunch and dnner: Buttermilk, 1 glass; water, 1 glass. Dinner: Clear soup (or twice a week small amount roast chicken, or 1 egg); toast or lettuce; imitation coffee; apple sauce. Between dinner and bedtime: Buttermilk and water. Daily simple enema followed by high colonic lavage with about 1½ quarts normal saline solution, until washings return fairly clear. Adapt diet to individual caloric needs and with constant regard to weight. *Pemberton.* 45

Asthma, Bronchial. TREATMENT. 1. When patient first seen during an attack, give 10 grains (0.6 Gm.) of blue mass or an equivalent amount of calomel with soda, followed by salts next morning. 2. Morphine and atropine injection, only if patient suffering intensely. 3. Sodium iodate, gr. iv-v (0.25-0.3 Gm.) every four to six hours, in capsules, given with food (contraindicated in the tuberculous, especially if hemoptysis). 4. Repeat mercurial purge if attack not markedly better in twenty-four hours. 5. Diet. During attacks: Broths every two to four hours. In intervals between attacks: Enough plain, coarse food to satisfy hunger and no more. Soups, clear of fat; fresh fish; raw oysters or clams; tender and lean meats; all vegetables except onions, cabbage, cucumbers, corn on cob; potatoes, peas, and beans only sparingly; only well-baked or toasted bread; rice, cereals, and eggs in moderation; no raw fruits; pastry, sweets, and any articles found by experience to disagree to be avoided. Careful scrutiny of patient's selection of foods required. Heaviest meal to be taken at noon; light supper. *Oettinger.* 37

Chorea. TREATMENT. Twenty-five cases, in children of 8 to 19 years, in which abnormal movements rapidly disappeared after 3 or 4 intravenous injections of 0.2 to 0.35 Gm. of salvarsan, given weekly. Recovery regularly after three or four weeks. General condition also always greatly ameliorated. *Marie and Chatelin.* 38

Constipation. TREATMENT. Stubborn constipation in infants is relieved by giving 1 dram (4 c.c.) of olive oil once or twice daily. Constipation in neurasthenics is also benefited. *Bram.* 47

Diabetes Mellitus. TREATMENT. For first two weeks restrict to careful antidiabetic diet, unless sugar in urine practically disappears in less time. Then cautiously increase carbohydrates, always warning patient of danger of overeating *permissible* articles. Should sugar persist, put to bed and restrict to 1 raw egg and 2 ounces of olive oil 3 or 4 times a day. Continue free use of a mildly alkaline drinking water. If any acidosis symptoms result, decrease amount of oil and give small quantities of carbohydrates. Proper mastication an important detail in treatment. For constipation, use: Olive oil, castor oil, glycerin, of each, 160 parts; gum arabic, 18; flavoring (oil of cassia or gaultheria), 0.5. Best diabetic flour is: Unadulterated soy-bean flour, 350 parts; unground poppy seed, 30; eggs, 250; pure baking powder, 15; water, 340. *Hodgson.* 39

Edema of Extremities. TREATMENT. Where edema of legs resisted all measures, especially where incision not permitted, good results obtained from local use of hypertonic saline solutions—25 to 50 Gm. (¾ to 1½ ounces) of sodium chloride to 1 liter (quart) of distilled water. Soak gauze compresses lightly in this, wrap around legs, and cover with thick layer of absorbent cotton, held in place by bandages. Leave dressing on over-

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night. Equally good results in edemas due to broken compensation, Bright's disease, etc. *Pathault.* Page 40

Filariasis. TREATMENT. Case of pronounced elephantiasis of lower extremities in which two intravenous injections of 0.6 Gm. of salvarsan caused disappearance of filariæ from blood and great reduction in size of limbs, weight falling from 400 to 244 lbs. *Barnes.* 1

Fracture of Hips, Intracapsular. TREATMENT. Longitudinal traction alone often unsatisfactory in results. Longitudinal combined with lateral traction, however, or wide abduction in plaster of Paris, usually gives serviceable limb. Former far easier to apply and the more suitable the older the patient. Plaster-cast method requires much skill in application, and is better adapted to young patients. *Davis.* 41

Gastric Ulcer. TREATMENT. Best preparation of bismuth to use is the subnitrate precipitated from a boiling-hot mixture. Cleanse stomach in morning with 150 c.c. (5 ounces) of Carlsbad or Vichy water, and three-quarter to one hour later give 10 to 20 Gm. (2½ to 5 drams) of bismuth subnitrate suspended in tumblerful of warm water. Administer daily, and increase or reduce dose, or discontinue, more or less rapidly, according to clinical course (Fleiner). Another method is to give same doses of bismuth finely suspended in oil, several times daily. Stepp recommends following bismuth suspension: Bismuthi subnitratis, gr. xlv (3 Gm.); chloroformi, ♏xv (1 c.c.); aquæ destillatæ, 5 fluidounces (150 c.c.); 1 to 2 tablespoonfuls to be taken hourly for several weeks. *Aaron.* 42

Hemorrhoids. TREATMENT. Olive oil a good demulcent laxative in hemorrhoids and anal fissure. *Bram.* 47

Lead Poisoning. TREATMENT. Obstinate lead colic relieved and constipation overcome by giving a tumblerful of olive oil once daily. *Bram.* 47

Poisoning by Illuminating Gas. TREATMENT. I. First stage, preceding loss of consciousness: 1. Fresh air. 2. Aromatic spirit of ammonia. 3. Effervescent sodium phosphate, to produce eructations and relieve nausea. 4. Oxygen inhalation. 5. Analgesics for headache. 6. Avoidance of violent exertion.—II. Second stage, patient unconscious, but breathing: 1. Howard artificial respiration, rhythmic compression of lower thorax, to assist breathing. 2. Oxygen, preferably under pressure. 3. Camphor, caffeine, digitalis, and strychnine hypodermically. 4. External heat, if indicated. 5. Massage of muscles after aërating lungs. 6. Treatment to be conducted in warm room. 7. If not prompt recovery, venesection and normal saline infusion, or use of "pulmotor."—III. Third stage, patient unconscious and not breathing: 1. Same measures as in preceding stage. 2. Blood transfusion. 3. Artificial respiration by Schäfer method, patient prone. *McCombs.* 44

Prurigo. TREATMENT. 1. Good hygiene. 2. Generous diet. 3. Codliver oil. 4. To control itching: Baths with starch, sulphurated potash, or creolin; tar, pure or mixed with olive or codliver oil; codliver oil ointment, with betanaphthol or phenol added. 5. To dissipate any coexisting eruption: Sulphur, in soap, solution of potassium sulphide, or thermal waters; codliver oil, covered with bandage and impermeable varnish; codliver oil, 3 parts, and white wax, 1, used as pomade, with or without covering; alternate injections of phenol and pilocarpine; X-rays; thyroidin. 6. In rebellious and severe cases: Soap patient in warm bath and apply a tar preparation or Vleminckx's solution. 7. In stage of lichenification: Radium. *Morris.* 50

Syphilis. TREATMENT. Following plan advised: Intravenous salvarsan injection, immediately followed by series (12 to 15) of intramuscular mercury salicylate injections, and later by 4 to 6 intramuscular injections of small doses (0.1 to 0.2 Gm.) of salvarsan in sesame oil. After this start new series of mercury salicylate injections, to be continued at increasing intervals during first year of disease. A number of the cases thus treated appeared to be cured. *Eisenstaedt.* 53

Tabes Dorsalis. DIAGNOSIS. Spontaneous fractures not infrequently an initial or early symptom of tabes. *Taylor.* 54

Tuberculosis, Pulmonary. DIAGNOSIS. Value of percussion in earliest stage emphasized. With patient lying on back on couch, employ light percussion on terminal phalanx of a finger firmly pressed on spot under examination. Three characteristic dull areas on either side should be sought, which may all be present and of considerable size while apex is still very fairly resonant: 1. Opposite inner part of first intercostal space (percussing anteriorly) and inner part of suprascapular fossa (posteriorly). 2. Opposite outer part of same interspace, and outer part of suprascapular fossa. 3. In upper part of lower lobe, percussing posteriorly at end of spine of scapula, and anteriorly in second interspace.

TREATMENT. 1. Inhalation of following solution: Creosoti, phenolis, spiritus chloroformi, ana 3ij (8 c.c.); tincturæ iodi, spiritus ætheris, ana 3j (4 c.c.). Two Yeo inhalers to be used on alternate days, cleansed by immersion in boiling water and careful drying. Patient to pour 6 to 8 drops of solution on felt of inhaler *every hour* during daytime, and once or twice during night if awake. Petrolatum or lanolin cold cream to be smeared over nostrils and upper lip before use of inhaler at first. 2. Period of rest in bed at beginning of treatment. 3. Treat digestive disturbances. 4. Give a sufficiency of easily digested food; malted milk, dis-

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solved in scalded whole milk, after each meal. 5. Careful disinfection of mouth 4 times daily, after the milk; antiseptic sprays for unhealthy conditions of fauces. Forty-eight complete recoveries in 70 cases thus treated. *Lees.* Page 54

Hydrotherapeutic measures, to be employed in 4 successive stages or steps, described: I. Ablution, beginning with water at 90° F., gradually reduced, by 2° daily until 60° F. reached; followed by drying and, if possible, exercise in open air. II. Affusion. With patient standing in water at 105° F., water at 85°, gradually reduced to 60°, is thrown over back and chest. III. Cold rub. With patient standing in water at 105°, a sheet is wrung out in water at 80°, gradually reduced to 50°, and actively rubbed till sheet warm. IV. Drip sheet. Same as last, with sheet dripping; patient rubbed and slapped for two minutes; water at 70° then poured over shoulders, and friction applied till sheet warm; same procedure rapidly repeated over other parts of body. *Baruch.* 56

Olive oil, ½ ounce (15 c.c.) two hours after each meal, increased weekly by ½ ounce up to 3 ounces, found to cause considerable gain in weight. *Bram.* 47

Typhoid Fever. TREATMENT. Olive oil useful as a food in 1- to 3- ounce (30 to 90 c.c.) doses 3 times daily. Also useful as a laxative; high injections of lukewarm oil may be given. *Bram.* 47

Collective statistics as to results of use of typhoid vaccines show 423 cases, with only 5.4 per cent. deaths. Dosage used by author: Initial hypodermic injection of 500,000,000, repeated at four-day intervals as long as required, and increased by 100,000,000 each time. Stock-vaccine injections made just under skin over insertion of deltoid or over tensor vaginæ femoris. *Callison.* 57

Vincent's Angina. TREATMENT. In mild cases, best results from use of trichloracetic acid. Membrane first removed by hydrogen peroxide and wiping with cotton swab; ulcer then anesthetized with 10 per cent. cocaine solution, and trichloracetic acid applied a few minutes after. Usually 3 or 4 applications at 2- or 3- day intervals necessary. Tincture of iodine preferable where ulceration extensive. For pain, orthoform. Carious teeth to be cared for. General condition also to be improved. *Halstead.* 58

Vomiting of Pregnancy, Pernicious. TREATMENT. Sodium bicarbonate, 5 to 50 grains (0.3 to 3 Gm.) a day, recommended. Part of it often vomited, but some retained. Continue for a week after vomiting stopped. Bowels to be well cleared by colonic flushing. Veronal also found useful. *Lyon.* 59

Whooping-cough. TREATMENT. Pertussis bacterin used in 40 cases. Disease not shortened, but bacterin causes, after preliminary slight aggravation, well-marked, and sometimes remarkable, symptomatic improvement in a certain proportion of cases. Best results produced at the height of the disease. Give 2 or 3 full doses—20 to 50 million bacteria each—at five-day intervals. In young infants moderate doses should be given early; they diminish severity of disease and minimize complications. *Zahorsky.* 48

Wounds. TREATMENT. Treat all wounds on which great force has been exerted, and especially those contaminated by soil and dirt-covered objects, as if infected with gas bacilli. Leave open where possible and irrigate thoroughly with peroxide. Bandage lightly, if at all. Inspect frequently and irrigate often. On first sign or symptom of infection, take smear and examine for *B. aërogenes capsulatus.* Open wound freely, if sutured, and if on limb place latter in bath or irrigate continuously. If condition extensive, expose field widely to air by free incisions. (Do not employ peroxide in full strength or inject in confined spaces or directly under tissues.) *Cramp.* 42

ANNOUNCEMENT.

DIABETES MELLITUS.—"I am undertaking an exhaustive research into the pathology, etiology and dietetic treatment of diabetes mellitus. I am very anxious to hear from every physician in the United States who has a case under treatment, or who has had any experience in the treatment of this malady. Von Noorden says 'the best treatment for the diabetic is the *food* containing the *greatest* amount of *starch* which the patient can bear without harm.' If any physician who reads this has similar or contrary experience, and would take the trouble to write me, I would esteem it a special privilege to hear from him, if only by a postal card."

WILLIAM E. FITCH, M.D.,
355 W. 145th St., New York City.

Book Reviews

INSOMNIA: ITS CAUSES AND TREATMENT. By Sir James Sawyer, M.D. Lond., F.R.C.P., F.S.A., F.R.S.E., Consulting Physician to the Queen's Hospital, Birmingham, etc. Second Edition. Pp. 107. Birmingham: Cornish Bros., 1912. Cloth, 2s. 6d., net.

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This little work, both useful and entertaining, is based upon lectures on insomnia delivered in the Birmingham Medical School. Since the exhaustion of the first edition, published eight years ago, much additional material on the subject was accumulated by the author which he deemed useful for incorporation in the book. The first two sections, dealing respectively with the etiology and treatment of insomnia, stand, with due revision and additions, as in the first edition, but the third chapter, consisting of a practical summary of the physiology, pathology, etiology, varieties, and treatment of insomnia, is new in the present issue. An index has also been added.

As before, the section on treatment is of especial interest. Besides emphasizing the importance of seeking and, wherever possible, removing the cause of the condition, the author discusses at considerable length the indications for various measures, such as the use of hypnotics, carminatives, exercise, mental self-discipline, purgation, counterirritation, etc. The practitioner will find much that is helpful in the summary of Sir James Sawyer's extensive experience in this special line.

PHARMACOLOGY. Action and Uses of Drugs. By Maurice Vejux Tyrode, M.D., Ex-Instructor of Pharmacology in the Medical School of Harvard University. Second Edition. Octavo of 288 Pages. Philadelphia: P. Blakiston's Son & Co., 1912.

In the second edition of this favorably known manual the author has incorporated the various new facts which have come to light in pharmacology since the former issue. As before, the book is not exhaustive, but is well suited to the needs of medical students, with their present crowded curriculum, as well as for practitioners who may wish to review the main facts in the subject. The work is by no means a reproduction *in parvo* of any of the standard textbooks on pharmacology, but gives evidence of an extensive search into the literature of this branch, from which only the more soundly established points have been culled, all vague and doubtful matter being rejected. The book is divided into four parts, which deal, respectively, with drugs whose constitutional action is in greater prominence; ferments, secretions, and extracts of animal organs; drugs whose local action is most in evidence, and drugs of inorganic origin. Under each of these main divisions the individual drugs are taken up in smaller groups, *e.g.*, the group of ether and chloral, that of amyl nitrite, etc. After each group description, in which special stress is laid on physiological action, there is a brief summary of the latter, followed by information concerning the therapeutic uses of the various agents discussed, and a list of the different preparations employed, with their doses. Apart from the lack of headings indicating the relationship of drugs from the therapeutic standpoint, *e.g.*, cardiovascular stimulants, depressants, etc.,—an important consideration for the student, especially,—the arrangement is a good one. The more essential points in the text are duly emphasized by free use of bold type and italics. On the whole, this work may be said to serve admirably the purpose for which it is intended.

THE THERAPY OF SYPHILIS. Its Development and Present Position. By Dr. Paul Mulzer, of Berlin. With a Preface by Prof. P. Uhlenhuth, M.D., Privy Councillor. Translated by A. Newbold. Pp. 248. New York: Rebman Company. Cloth, $1.50, net.

Drs. Uhlenhuth and Mulzer were the first to demonstrate that rabbits were especially adapted for experimental research on syphilis, and thus contributed largely in paving the way for the modern chemotherapy of this disease. In this volume, Mulzer, after first discussing briefly mercurial treatment, considers in detail the history and manner of use of the various chemical substances more recently introduced into antisyphilitic therapeutics, viz., atoxyl, arsacetin, atoxylate of mercury, hectine, soamin, arsenophenylglycin, and, in particular, salvarsan. More than three-fourths of the book is devoted to the last-named compound. The author enters rather fully into the question of modes of administration, local effect of intramuscular and subcutaneous injections, the action of salvarsan on syphilis in its various stages, the treatment of ophthalmic, visceral, and congenital syphilis as well as of the parasyphilitic affections, the dosage of salvarsan, its effect on the Wassermann reaction, the question of secondary effects, etc. The book closes with a bibliography, which unfortunately is somewhat old,—only up to December, 1910,—an index, and a list of authors quoted. The work contains a good deal of valuable information and cannot fail to be of use to all who are interested in the new subject of antisyphilitic chemotherapy.

AN ESSAY ON HASHEESH, Including Observations and Experiments. By Victor Robinson, Contributing Editor, Medical Review of Reviews; Pharmaceutical Chemist, Columbia University; Member of the American Chemical Society, etc. Pp. 83. New York: Medical Review of Reviews, 1912. Cloth, 50 cents.

In this small book hasheesh is discussed from the historic, botanic, chemic, pharmacologic, and therapeutic standpoints. A detailed and decidedly amusing account is then given of the effects of large doses of fluidextract of cannabis, ingested by the author and some of his friends. The book is not only entertaining, but represents a noteworthy addition to the already numerous descriptions of the effects of this curious drug.

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The General Field

Conducted by A. G. CRANDALL

An Epigram Worth Remembering

Governor Wilson, president-elect, recently told some visitors in his office, who were urging a certain appointment as being a "graceful" thing to do, that "gracefulness is easy and justice is hard."

All those who come in wide contact with humanity will indorse this statement.

Our Legislatures are full of graceful politicians, who find it far easier to go with the crowd than to settle on their merits the various questions coming before them.

The temptation for the young physician is to follow the path of gracefulness and avoid those many plain statements of fact which it would be well for their patients to hear.

It is often easy to antagonize people by telling the whole truth, and yet there is a large amount of clinical material about the country that needs most of all the real truth as to the natural results to be expected from following their bent in the way of personal characteristics, especially in matters of hygiene.

It may not be a graceful thing for a doctor to tell his adult patients, complaining of poor appetite and bad digestion, that more frequent baths and better care of the teeth and the mouth might greatly increase the desire for appetizing food, but it would certainly be an act of justice to the patient and doubtless to the entire family.

It is probable, however, that gracefulness in the above sense will be the aim of the many and that a very few can reserve to themselves the special privilege of administering justice.

High Surgical Fees and the Money Trust

Every little while some dauntless newspaper Hampden sets out to champion the cause of the "proletariat" by denouncing the wrongs inflicted by surgeons who not only slice up the human anatomy but also the human pocketbook. The surgeon held up for psychological examination is described in colors which would make the late Captain Kidd appear by comparison a real philanthropist.

This state of affairs, of course, is unfortunate, as it produces the to-be-expected effect on the chronic grumblers to be found on every hand. The situation therefore calls for the exercise of a certain amount of that diplomacy which can so frequently be made to oil the social machinery, which without it is prone to creak.

Although recent revelations show that the "money trust" is made up of a very limited membership, it is yet subject to a considerable variety of ailments, some of them being of a very unusual character. If it could be passed along to the newspaper champions that the medical and surgical fees required of those affiliated with the money trust were proportional with the fees required by the said trust for floating bond issues, undoubtedly such information would be balm to the feelings of a large number of critics.

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Sauce for the Goose, etc.

A New York newspaper accuses the Postoffice Department of being inconsistent, in denying mail privileges to certain enthusiastic promoters of mines and other glittering enterprises, and at the same time making no protest when alluring posters picturing the delights and advantages of ordinary military service to young men are passed through the mails.

Such minor peccadillos are hardly to be mentioned, however, when compared with that betrayal of the confidence of the Postoffice Department and the entire population as well, of which the Weather Bureau is guilty. Not only are the United States mails used to deceive the innocent public, which may actually place some dependence upon the weather forecasts, but it is a question if the Weather Department has not also broken the various stringent antilottery laws by inviting the public to engage in their various gainful occupations and to make their daily plans with due reference to weather forecasts.

Most people depend upon their daily occupation for their daily bread. And if the laundress hangs out her washed clothes to dry in the air, depending upon the prediction of "fair" from the Weather Department, and the rain spoils her plans for the day, she has grounds for complaint. Multiply this common incident by 20,000,000 families and some idea can be gained as to the year's total of grievances against the Weather Bureau.

It is said that no individual can long maintain his poise and composure in the face of the wrath of the great public. The Bastile was surrendered, although regarded as impregnable, because the jailor was so completely unnerved at the cries of rage coming to his ears from the surrounding mobs; and yet, miraculous as it may seem, the Weather Department has pursued its way thus far during 1913 with a calmness and serenity which, in view of the character of its predictions, seems little short of marvelous.

A Defender of the Tonsils

It is refreshing to read the vigorous defense of the sadly maligned tonsils which has been recently made by Professor McKenzie.

The child of conscientious parents, who has had large tonsils and who is unlucky enough to have those tonsils become affected a few times with tonsillitis, has had a hard time in many instances to keep these essential organs. We say essential, because there is no special reason why we should feel that the Creator made a mistake in giving people tonsils, any more than he did *in* equipping each normal individual with the vermiform appendix.

That a great many sets of tonsils have been extirpated in the absence of any necessity for such a radical action is undoubtedly a fact.

In a recent issue of the Maryland Medical Journal Dr. McKenzie makes the following significant comment: "The change in anatomical relations after operation is often so great that function is crippled more after their complete removal than it was before. Moreover, it occasionally happens that the resurrection of a 'buried' tonsil is followed by the burial of the patient."

The plea made by this well-known authority for the preservation of the tonsils, or at least a sufficient portion to permit the continuance of function, is worthy of the consideration of the entire profession. Dr. McKenzie mentions enough unfavorable consequences following removal of the tonsils to convince

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any unbiased physician that only in exceptional conditions should these important organs, which have such a mysterious relation to normal function, be disturbed.

Children Half Price

There is no doubt that a considerable proportion of child mortality is due to what might be called parental neglect, but which is in reality a dread of unnecessary expense. Children show such alacrity in recovering their normal physical condition after a variety of upsets that even fairly intelligent parents are apt to get an idea that the child possesses even greater powers of resistance than the adult,—an error that fills many untimely graves. Just as a trip to the dentist is dreaded and postponed through a fear that an expensive program will be recommended, so is there often a reluctance on the part of poor families to take a child apparently in reasonable health to the doctor, for fear that he will find something wrong with the eyes, or the nose, or the throat, or with the general physique, that will suggest a course of treatment of some kind involving expense.

The wise teacher in the primary school is careful not to notice too many errors in deportment, and it is sometimes wise for the family physician not to suggest too many remedial measures at once. Doctors frequently get a reputation as hobbyists among their patients, and their recommendations are not taken as seriously as they should be.

And while it may be iconoclastic to suggest such a thing, it is still a question whether, as a matter of diplomacy as well as business, treatment for children might not well come under a special classification, with lower rates of office fees for young children. Such a custom would often result in the family doctor being able to maintain a closer supervision of the children of his clientele, resulting in benefits both for himself and the community in general.

Low Shoes for Health

People are slow to give up their pet theories. Just as it is difficult to persuade some women that it is not necessary nor desirable to have a young infant swaddled in heavy clothing, so is it hard for many people to believe that they should not wear heavy shoes coming well above the ankle in a *warm* atmosphere. Some observation, however, will show that heavy high shoes worn indoors first produce a feeling of discomfort as being too warm, and that afterward there is apt to follow a condition of clamminess even more uncomfortable. This goes to show that a heavy leather foot covering has not only restricted ventilation of the feet, but circulation of the blood as well.

It is reasonable to believe that such interferences with the circulation must produce unfavorable effects, and that any tendencies to rheumatism and allied conditions must naturally be unfavorably influenced thereby.

It is singular but true that people engaged in indoor occupations, spending their working hours in superheated offices, often feel that they must in winter protect themselves from cold by wearing shoes of heavy calf-skin, sometimes leather lined; while in the lumber camps in the far North comparatively light, pliant moccasins of deer-hide are worn on the coldest days in the frosty snow with entire comfort.

However, as before suggested, superstition dies hard and heavy leather shoes coming high above the ankle will continue to be worn during the greater part of the year, irrespective of every logical

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protest of students of hygiene. Only the change from cotton hose to woolen would be required to make low shoes soon become perfectly comfortable for the average person except in the coldest weather.

Too Many Tinkers

Certain people, especially those who employ low-priced labor, have deprecated the ambition of young men of moderate means to secure a liberal education instead of taking up the calling of a mechanic. They seem to regard a university course of instruction as something which should be reserved mostly for the rich.

There is not so much danger from the "higher education" as there is from the insufficient education secured in the ordinary schools by a great majority of school-children. Through natural indolence, lack of ambition, and especially selfishness of their parents, they leave school before they are half-fitted for any occupation whatever, and join the great army of unskilled labor which must eat and be clothed. Most of this great multitude is found filling positions of no responsibility in the cities.

All who are informed in the matter are aware that the building up of great manufacturing industries in all parts of the civilized world is at the expense of the agricultural districts; likewise, all informed people agree that the basis of all material wealth comes from the farms, which are now being tilled under greater disadvantages than at any time during the past two or three centuries.

This being a proposition from which there are few sincere dissenters, why should the discussion be clouded by gloomy theories regarding the diminished power of the dollar, the apparent misfortunes associated with increased gold supply, the probable dangers resulting from the unearned increment, etc., when the solution of so many problems obviously lies in a more rational alignment of those who earn their bread by their own efforts?

A tariff-protected industry, under fair conditions, produces a few wealthy employers and an army of employés who, in some instances, may be apparently well paid and comfortable, but who, nevertheless, have been drawn away from the farms to become consumers of farm products instead of producers of same. Not infrequently an element of extreme selfishness entering into this system of employment produces still greater fortunes built up for the few, and not even the consolation of immediate comfort to compensate the employés for what many of them have lost from giving up their country life for an urban one.

The great problem is how to convince the average young man that he has more to gain from an agricultural life, and how to convince the young woman that domestic science is a better-paid and more honorable employment than selling fancy articles behind the counter or wasting the life away amidst the whirl of machinery in a mill. When this problem is solved, there will not be so much occasion to worry about the fact that there has been a larger production of gold in recent years than formerly, and that shrewd investors in real estate have become wealthy through the normal advance in values.

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Original Articles

NOTES ON THE DIFFERENTIATION OF CARDIAC ARRHYTHMIAS AND THEIR TREATMENT, WITH A NEW TIME-MARKER.*

BY THOMAS E. SATTERTHWAITE, M.D.,

NEW YORK, N. Y.

THE subject of cardiac arrhythmias took on a new phase as soon as graphic methods were used for their differentiation. Indeed, the use of graphic instruments has revolutionized the matter by disclosing new data of great practical value. Most of these discoveries have been the work of the last ten years. As a single illustration of the lines of investigation and their clinical results, it may be mentioned that Friberger[1] recently undertook to examine the hearts of 321 unselected children between the ages of 5 and 14, taking graphic records of each child. Only about 37 per cent. had regular pulses. Of the remainder about 12 per cent. had great irregularity and about 50 per cent. a moderate amount. The variety of irregularity was that which Mackenzie has called "the youthful type," and was about equally common in the two sexes. The etiology was not clearly evident, but Friberger found that in advanced tuberculosis there was arrhythmia in about half of those examined. This is only one of the many fields in which graphic methods are helping the practising physician.

It has now been generally accepted that arrhythmias may be satisfactorily classified with reference to the five physiological attributes of heart muscle, demonstrated by Gaskell in 1882. These are, as is now well known: (1) Rhythmicity, *i.e.*, the faculty of rhythmically initiating a stimulus. (2) Irritability or excitability, *i.e.*, the capacity for receiving a stimulus. (3) Contractility, *i.e.*, the faculty of responding to a stimulus. (4) Conductivity, *i.e.*, the ability to convey a stimulus. (5) Tonicity, *i.e.*, the power to maintain cardiac tone.

* Read at the Thirteenth Annual Meeting of the American Therapeutic Society, held in Montreal, Canada, May 31 and June 1, 1912.

[1] Upsala Laek. Förhand., Jour. Amer. Med. Assoc., March 16, 1912.

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Four distinct varieties of arrhythmias corresponding to the first four faculties or attributes can be demonstrated by graphic tracings.

To the first of the forms to be described I have given the name *pneumogastric arrhythmia,* because of its close relation to pneumogastric influences. It was described by Kussmaul years ago, and has been called vagus, fundamental, sinus, normal, or respiratory arrhythmia. The word sinus implies that it is a variety of the rhythm that originates in the sinus venosus, *i.e.,* it is the normal rhythm. This pneumogastric arrhythmia is a variation from the standard cycle within physiological bounds. Though the cardiac cycle varies in length, the systolic phase is little altered comparatively, while the diastolic is considerably lengthened, and this latter feature is the chief characteristic.

It may be seen in a tracing of the radial pulse immediately after the apneic period of the Cheyne-Stokes respiration of uremia. Kussmaul called it the *pulsus paradoxus.* It is the pulse following a deep inspiration; hence the term "respiratory." It can also be caused by the act of swallowing, which is largely regulated by the vagus or pneumogastric; hence the term pneumogastric arrhythmia. Apart from graphic tracings, this form of arrhythmia is recognized by the finger on the pulse. It can usually be inhibited by a single dose of atropine, $\frac{1}{60}$ grain.

It is not well to attribute too much importance to an arrhythmia which is usually quite transient, functional in character, coming and going from slight causes. But exceptionally it may be of a more serious nature, as in tuberculosis, or after infective diseases, especially the eruptive fevers of children. It occurs sometimes in neurasthenia; also in overdosing by digitalis and probably other drugs which affect the cardiovascular mechanism. From whatever cause, it is a loss of the normal rhythm, the stimulus to which we believe originates, as I have said, in the sinus venosus.

In *extrasystolic arrhythmia* there are extra—that is, as it were, supernumerary—contractions, from stimuli that do not originate in the sinus, though in the main the regular or sinus rhythm is maintained. They are of two principal types: the *ventricular,* where the contraction originates in the ventricle, and the *auricular,* where it originates in the auricle. Take an example of what appears to happen in these cases. If for any cause the left ventricle fails to empty itself, the residual blood, acting as a stimulus, can make the ventricle put in an extra beat before the normal auricular stimulus has passed down to it. On the other hand, in dilatation of the auricle, as, for example, in advanced mitral stenosis, the incomplete expulsion of the blood into the ventricle may operate to produce a supplementary contraction, which would then be an auricular extrasystole. Strain of auricle or ventricle also might, and probably does, produce extrasystoles. These have been called "dwarf" systoles, from their small size; "premature" systoles, because the contraction is in advance of the normal period for the contraction, and "interpolated" systoles, because they are actually interposed between beats that are of the prevailing type at the time.

All extrasystoles are followed by a pulse period that is rather longer than

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the normal. In the ventricular form the length of the preceding pulse period added to that of the following pulse period is equal to the length of two normal pulse periods. In the auricular form the pulse period following the extrasystole is shorter than the corresponding compensatory pause in the ventricular form. Such systoles occur at regular or irregular intervals. They are illustrations of an abnormal irritability or excitability of the heart, and are most common in persons of a neurotic constitution. Sometimes these extrasystoles cannot be detected by the finger, but they are usually recognized upon auscultation, when the regular sequence of beats is occasionally interrupted by one or two short sounds followed by a brief pause.

When, in a radiogram (radial pulse tracing), it is noted that the length of the pulse period preceding the extrasystole, together with the pulse period following, constitutes a length of two ordinary pulse periods, this is taken to mean that the extrasystole is ventricular, and, according to Mackenzie, that the stimulus originated in the His bundle, on the distal side of the node. But the points of origin of the stimuli may be in other parts of the tissue intermediate between auricle and ventricle. These matters are still engaging the attention of physiologists, and have not been absolutely determined.

In the auricular extrasystole the stimulation is thought to arise in the primitive tissue of the auricle. These extrasystoles can be seen in jugular tracings. A characteristic of this auricular extrasystole is that in the arteriogram the compensatory pause following is shorter than in the ventricular extrasystole, as already stated.

Extrasystoles occur under the most varying conditions. Coffee, tea, tobacco, and gastrointestinal distention are examples of determining causes; under these circumstances their occurrence may not be of very serious importance, though when they happen in toxemia, in convalescence, or in the weak heart their presence adds to the gravity of the situation. They may occur in conjunction with other cardiac manifestations, when they constitute a further complication.

Not infrequently the extrasystole is appreciable by the patient, who may feel a sudden thud in the precordium, perhaps with a sense of faintness. It may even seem as if the heart were going to stop; and, as a matter of fact, it may actually do so. I have had such a case, where the heart did stop for several seconds—how many I do not know. It may be remembered that a man named Nordini, an Austrian Pole, is said to have the power of stopping his heart for twenty seconds, and his statement has not, I think, been contradicted. But the extrasystoles are not always appreciable subjectively. To make them distinct, the patient should be told to run round the room a few times and then hold his breath. The extrasystoles are intensified by hurried movements.

The really most important function of heart muscle is contractility. A striking example of its abnormal characteristics is seen in the *alternating pulse*, which consists of an alternation of large and small beats. The alternation is continuous,—which distinguishes this type of pulse from extrasystolic arrhythmias. It may always be recognized and differentiated by graphic

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methods when other physical methods leave doubt as to the diagnosis. It is, however, a rarity.

Another example of abnormal contractility is seen in *auricular fibrillation*, formerly called *nodal rhythm* by Mackenzie, and one cause of the *permanently irregular pulse* of Hering. Here the cardiac cycles vary so much that there is no sequence of beats having the same length. This special characteristic was well shown in one of my cases of heart-block. The source of the difficulty is put at the auriculoventricular node, which governs auricular and ventricular contractions through the bundle of His.

In 1905 Cushny and Edmunds suggested that in some of these patients the cause might be auricular fibrillation, a condition in which component parts of the muscle wall of the auricle contract independently of one another, and in such a disorderly fashion that it might almost be said auricular contraction as a whole was at a standstill. But it was not until 1909 that researches by Lewis on the lower animals showed, by comparison of the arterial and venous pulse tracings and electrocardiograms, that this so-called nodal rhythm, or permanently irregular pulse, was to be attributed to auricular fibrillation.

In fibrillation there seems to arise in the auricle a continuous shower of stimuli which, falling on the node, excite it to send stimuli to the ventricle as rapidly as the bundle (and so the ventricle) is capable of taking them up. At first the ventricular contraction is apt to be very rapid, and the patient may die rapidly of heart-failure. But if the ventricle can be made to beat more slowly, the patient may lead a useful and even vigorous life for some years. It is therefore very important to diminish the rate, and this is done in a remarkable manner by digitalis. The gravest sign is an increase in rate; say, from 100 to 150. The digitalis should then be pushed until there is a fall to 80. My experience tallies with Lewis's view; for in the permanently irregular pulse, relief only comes from the continuous use of digitalis or strophanthus. Hering recognizes this fact. Mackenzie believes, however, that a good deal can be done for the patient. He finds, for example, that the irregularity is most often associated with rheumatic hearts, usually those of mitral stenosis, and with the fibroid heart of senility. In fact, as the deposit of fibroid tissue is common in both these varieties of cardiac disease, it seems possible that the fibroid deposit is the cause. In one case of mine there was a fibroid tumor of the uterus, but its removal did not improve the cardiac difficulty.

According to Lewis, auricular fibrillation constitutes at least 50 per cent. of all irregularities, the disturbance of cardiac rhythm having its origin in the auricle, and being due to temporary or permanent inco-ordination of the musculature of this chamber. In a study of 106 cases he has reached the following conclusions, which differ somewhat from those of Mackenzie: The rate of the pulse may be reduced as low as 30, or increased as high as 200, but this in itself has little significance, because many beats of the heart may not reach the radial artery. The high rates, however, between 110 and 150, are the most common, and with these the irregularity is greatest. According

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to Lewis, the diagnosis rests on these points: 1. The absence of the normal auricular contraction, as seen by the absence of the wave in the tracing. 2. The presence of a ventricular beat having its origin in an impulse received from the auricle. 3. Special oscillations in the curve, which have been shown to be due to the continual contraction of the various parts of the auricle quite without system or co-ordination. 4. Constancy of this picture from patient to patient in respect to the three first points.

Fibrillation is responsible for most of the disturbances of the ventricular system. Indeed, in the vast majority of instances a sphygmogram showing that no two successive heart beats are of the same length implies the diagnosis of auricular fibrillation. To Cushny, Mackenzie, Wenckebach, Rothberger, Winterberg, and Lewis the credit of the discovery is due. Janowski has known such a case to last five and a half years, Mackenzie ten years, I eleven and a half years.

Of the existence of auricular fibrillation there seems to be no doubt, but we are still lacking in an agreement as to the criteria necessary for its detection.

In affections of conductivity the normal stimulus, which starts in the sinus venosus, passes from the primitive tissue of the auricle over the bridge of His to the ventricle, may be delayed in its course, may not cross at all, or may be arrested beyond the bridge. Any one of these several conditions will produce *heart-block*, a term invented by Gaskell in 1882 to indicate arrest or blocking of the impulse normally conducted from auricle to ventricle.

The *pulsus infrequens*, improperly called the slow pulse, is rather certain to indicate a loss of conductivity. When, as happens in such cases, a pulse is found where only about 26 to 40 beats can be recognized at the wrist, an inspection of the jugular will usually show that the auricular contractions are really twice or even more times as frequent. This inspection should always be made, when, if the head is turned to the left, the beating of the vein can be seen in a good light, and the diagnosis made without the aid of graphic methods.

In health the a-c intervals show in tracings the time occupied by the passage of the blood from the auricle to the carotid, which is usually one-fifth of a second, though it may be two-fifths, and persist at that rate for years. In complete heart-block the a-c interval varies so much that the auricle may be said to beat quite independently of the ventricle. Where there is complete heart-block, the a-c intervals may be seen to vary so that no two have the same length. Manges[2] has recently given the history of a patient with incomplete and subsequently complete heart-block, in whom the auricular rate, as shown by graphic tracings, was 280 to the minute, the ventricular ranging from 40 to 70, which rate, however, was raised to 120 on two occasions by the use of atropine.

Among the most frequent causes of loss of conductivity are syphilis, fibrosis, and neoplasms. Since the cause of auricular fibrillation is the same as that of heart-block, though usually in the substance of the ventricle, the

[2] Medical Record, April 8, 1911.

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one may pass over into the other. The condition may also be due, and in several of my cases has been, to hemorrhage at the base of the brain, when pressure is brought to bear on the nucleus of the pneumogastric. Stimulation of the peripheral branches of the pneumogastric may also produce heart-block; likewise, aconitine, epinephrin, muscarine, physostigmine, and asphyxia. In a case of acute heart-block, recently reported to me by Waitzfelder, of New York City, the condition was evidently due to overdosing by digitalis.

According to Mackenzie, the stimulus may go through and the pulse be as high as 70, and then fail to go through, leaving the pulse at 30. Such cases should encourage us to use appropriate remedies to restore the heart's action. Certainly if there is the slightest suspicion of advanced syphilis, antisyphilitic remedies should be pushed to the limit.

It is important to know that a diagnosis in heart-block can be made without the use of graphic methods. At present we recognize four forms of this disturbed conductivity:—

1. *Acute* heart-block, due usually to the misuse of drugs.

2. *Partial* heart-block, where the stimulus is occasionally carried through, as shown by an alternation between the normal rate and the slow rate.

3. *Complete* heart-block, where the auricle and ventricle contract independently.

4. The *Adams-Stokes syndrome,* where loss of conductivity is associated with syncopal attacks. The syncopal attacks are often attributed to cerebral anemia, induced by the slow action or temporary suspension of ventricular systole.

As for Gaskell's fifth attribute of cardiac muscle tonicity, it may be said that the loss of it is exemplified in the dilated heart.

TREATMENT.—In the matter of treatment, in (1) disturbed rhythmicity, the first type of irregularity discussed, it is quite evident that, as a rule, this condition does not justify our sounding notes of alarm. In other words, it is physiological, as, for example, in the so-called youthful type of irregularity. Consequently no treatment is required.

In (2) extrasystole there may be a neurotic basis, or the condition may result from the pressure of gas produced by gastrointestinal fermentation. Again, it may be a reflex from the gastrointestinal tract, as in indicanuria. In the one case, sedatives, such as camphor or the bromides, are useful; in the latter, remedies that regulate gastric or intestinal digestion, such as pepsin, pancreatin, bismuth, sodium bicarbonate, etc. If the extrasystoles are due to the excessive use of coffee, tea, or tobacco, the therapeutic indications are evident.

In (3) auricular fibrillation there is no remedy so satisfactory as digitalis or its congeners, of which strophanthus is next best. Only the most reliable active principles of these drugs should be used, because if given in suitable doses they are effective without causing any of the unpleasant effects usually associated with these drugs in other forms. The intelligent use of baths and resistance exercises is also very valuable.

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In (4) heart-block, if it be acute and caused by digitalis, the use of the drug should, of course, be suspended at once. If syphilis exists, antisyphilitic remedies should be used according to our established rules, and in sufficient quantities. Atropine, $\frac{1}{60}$ grain, is available as a test to determine whether the heart-block is due to a lesion of the pneumogastric; it will usually increase the rapidity of the ventricular contractions, when these are below the normal, but it exerts no curative effects.

It is evident that graphic methods are useful not only in diagnosis with reference to treatment, but also as a register of actual facts. Certainly no large medical institution should be without a good polygraph.

A New Electric Time-marker.

Owing to the length of time required to procure a Jacquet time-marker, its initial expense, duties, and express charges, I have undertaken to devise an American time-marker, which can be made at home and involves no great expense. The instrument is actuated by two ordinary dry-cell batteries. These are connected by wires with the two more distant binding posts of a switchboard, the current actuating the platinum interrupter of a clock. The current passes ultimately to the signal magnet and vibrator. The pen-arm or lever of this magnet vibrates as often as 100 times per second. Fine adjustment screws regulate the excursions of the pen-arm. The kymograph used is the one known as the slow and fast combination model of the Harvard Apparatus Company.

THE PREVENTION AND SURGICAL TREATMENT OF CANCER.*

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The subject of cancer has received so much attention of late, in the lay press as well as in medical journals, that one hesitates in selecting this topic for discussion. The cancer question, however, is the most important one confronting medicine today. In spite of painstaking study and investigation both on the part of clinicians and laboratory workers it has defied solution from the standpoint of etiology, and we have failed in a great measure to apply practically what little exact knowledge we have of the natural history and pathology of this condition.

In order to impress upon you the importance of this question, permit me to quote from a recent paper of mine showing what cancer mortality really means: "Unless the public and medical profession are made to realize what a terrible scourge this dreadful disease is we cannot hope to arouse sufficient

*Read before the Mt. Carmel, Pa., Medical Club and the Lackawanna County Medical Society.

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interest and enthusiasm in the problem to render fruitful the truths we have learned in relation to the prevention and cure of this plague. As the result of the application of the science of preventive medicine there is an annual saving of, approximately, 150,000 lives each year in the United States. Cancer does not take part in this saving; in fact, the disease is on the increase. The census for 1900 showed that cancer had increased 12.2 per 100,000 population during the ten previous years. Not only has cancer shown an increase in the United States, but the same condition has been almost universal. Williams[1] has shown that, in England, 1 man out of 11 over 35 years of age dies of cancer, and 1 woman out of 8 over 35 years of age will die of the disease. I was anxious to see how these figures would compare with the death rate for the same age in the United States; so I undertook a tedious and painstaking study of the reports from the Bureau of Vital Statistics. I found the following data, which I think are appalling enough to arouse interest in the checking of this foul plague. In the registration area of the United States for the year 1906, out of a total death rate of 186,944 males over 35 years of age, 10,644 died of cancer, and, out of a total of 156,465 for females over 35 years of age, 16,879 died of cancer. This means that 1 man in 17 over 35 years of age will die of cancer and 1 woman in 9 over 35 years of age will die of cancer. The corresponding phthisis rates for this age period are for males 1 in 10 and for females 1 in 14. In other words, more women past the age of 35 die of cancer than of pulmonary tuberculosis. I further found that between the ages of 35 and 39 1 man out of 48 and 1 woman out of 13 will die of cancer; between 40 and 44, 1 man out of 28 and 1 woman out of 8; between 45 and 49, 1 man out of 20 and 1 woman out of 6; between 50 and 54, 1 man out of 14 and 1 woman out of 5. I further showed that there is an annual economic loss in half of the United States, as the result of cancer, of $224,144,400. The population of the registration area of the United States in 1900 for males and females over 35 years of age was: males, 4,933,424; females, 4,767,304. Out of the immense number of people living at that year 281,909 men and 518,185 women have or will die of cancer. Surely cancer is a problem that is worthy of every effort that can be made for its control."[2]

In the past practically all our efforts in the solution of this problem have been directed toward finding the cause and preaching the necessity of early diagnosis. The cause has not been found and seems to be just as elusive as ever, but every encouragement should be given to the noble laborers in this most fertile field. While much time and energy have been spent in inculcating the methods and importance of early diagnosis so that prompt treatment can be given, I am of the opinion that but little good has been accomplished by this propaganda. We might as well admit that cancer is a well-nigh incurable condition no matter where situated or how early seen. I do not, by this, mean to intimate that cancer is never cured, or that we should not attempt to cure, particularly the early cases, but I do mean to affirm that the percent-

[1] "Natural History of Cancer."

[2] Surgery, Gynecology, and Obstetrics.

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ages of recurrences of supposedly cured cases are so great that but little can be accomplished by any known method. The time to cure cancer is before it is cancer.

What is meant by this is that there always exists a precancerous condition, and that if this is removed the development of cancer will be prevented. This fact is fairly definitely established. We know from clinical observation, laboratory investigation, and experimental study that it is so. We further know that constant irritation of a precancerous condition will definitely stimulate the development of cancer. Constant irritation alone will often determine the production of a precancerous condition as well as determine the incidence of the disease. This is shown in the development of chimney-sweep cancer, pipe cancer of the lip, and the peculiar form of skin cancer of the abdomen found in the natives of Kashmir, who wear a charcoal stove next to the skin.

If these factors—a precancerous condition and irritation—are accepted as potent agents in the causation of cancer, what is more rational in the prevention of the condition than the removal or cure of the precancerous stage and the removal of the constant irritation? These observations are not altogether new. I was interested not long ago in reading in a textbook on diseases of women by Ashwell, published about 1761, the chapter on cancer of the uterus. In this chapter he recites the number of cases of cancer of the uterus which could be cured by the application of tincture of iodine to the cancer in its very early stages. He noted that the cases of ulceration—to him cancer—that received this treatment were cured, and that there was no further development of cancer, while similar cases that were not treated developed cancer of the cervix and eventually died. Of course, his conclusions were wrong. The lesions he was treating were erosions and ulcerations of the cervix and not cancer, but he established a valuable lesson which is only now being appreciated. In other words, the erosions and ulcerations are the precancerous conditions, and, these being cured, of course cancer did not develop; when they were neglected, on the other hand, cancer did develop.

It only remains for us, in the light of our present knowledge, to discover all the precancerous conditions and remove them to prevent the terrible suffering and the deaths from this disease.

Let us consider first *cancer of the uterus*. This condition occurs in two forms, involving, respectively, the cervix and the body of the uterus. Cancer of the *cervix* is by far the more frequent condition, and this frequency simply bears out very forcibly the theory of the presence of a precancerous condition and constant irritation as the determining factors of the disease.

It is now a universally accepted belief that cervical lacerations and their complications—erosion of the mucous membrane, ulceration, and cystic degeneration—predispose to cancer. Of 50 of Cullen's cases of squamous-cell carcinoma of the cervix, concerning which accurate data were available, 49, or 98 per cent., had had children. He further states that, "when one considers the large number of women who remain unmarried, and finds that nearly all of the victims of squamous-cell carcinoma of the cervix have had children,

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one cannot but conclude that the injuries incidental to labor have a potent influence in the development of this variety of cancer." Penrose says: "Cancer of the cervix is a disease of the childbearing woman. It is very rare in the woman who has never conceived. Statistics show that women who develop cancer of the cervix have borne on an average five children." If we recognize this truth, that lacerations of the cervix and their complications are the predisposing cause of cancer of the cervix, it stands to reason that if we cured these conditions before cancer developed we would save many of the thousands of women who die annually of this disease. Ashton sums up the question in the following forceful paragraph: "The obstetrician, before discharging a patient after confinement, should examine the cervix, and, if a laceration is found to be present, it should be repaired in three or four months. It should also be the duty of the general practitioner to examine the cervix of all women who consult him for pelvic symptoms, and urge a repair operation if a laceration is found. And, finally, I would urge, as a routine practice, the examination of every woman over 40 years of age who has borne children and the immediate repair of all lacerations of the cervix that may be discovered." My personal opinion is that in the latter cases an amputation of the entire cervix is a better prophylactic measure than a mere repair.

As to cancer of the *body* of the uterus our knowledge is not as definite as in that of the cervix. We do know that fibromata and adenomata are particularly prone to undergo carcinomatous or sarcomatous degeneration, and it is fair to assume, though it cannot be definitely proven, that chronic endometritis, irrespective of the cause, is apt to act as an irritant to cell proliferation and be a predisposing factor of cancer. It was formerly taught that fibromata were likely to undergo atrophy as the woman approached the menopause, and consequently the advice was given not to operate near this period, but to wait for a favorable change in the tumor; the teaching even went so far as to advise the production of an artificial menopause by removing the ovaries. This teaching was given its death knell by the classical paper of Noble, who showed that the tumor, instead of becoming smaller and less dangerous, became, as a matter of fact, far more dangerous on account of the very large number of cases in which it underwent malignant degeneration. My feeling, radical as it may seem, is that any fibroid of the uterus, irrespective of its size or the symptoms produced, is a dangerous tenant and had better be evicted. In this connection I also believe that all forms of chronic endometritis, as well as their primary cause, should be cured by proper methods.

The stomach lends itself to the same prophylactic measures as does the uterus. As a result of the careful work in the Mayo clinic it has been shown that at least 75 per cent. of *gastric carcinomata* develop in the site of and from a chronic ulcer. Of course, it is impossible to say how many gastric ulcers become chronic but later do not become carcinomatous. It is this one fact that tends to make us a little conservative in our application of the principles of prophylaxis. I hardly feel that it would be proper to advise an operation for the removal of the ulcer in all cases of cured acute gastric ulcer; but I do believe that all chronic ulcers producing symptoms are distinctly

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surgical and not medical conditions, and I further consider that the only way to treat a chronic gastric ulcer surgically is by excision of the ulcer. Gastroenterostomy alone for the cure of gastric ulcer, in the light of our present knowledge, is not a justifiable procedure. Gastroenterostomy will have to be performed when operating for gastric ulcer, but it should only be done as an adjunct to excision of the ulcer in those cases where there is or where a pyloric stenosis is likely to develop.

The same thing holds true in reference to duodenal ulcer. While *duodenal cancer* is rare, it is likely that it has frequently been mistaken for primary pyloric cancer on account of the close proximity to the pylorus. I have recently had called to my attention a case of duodenal cancer developing on the site of a chronic ulcer. At the meeting of the Clinical Surgeons of North America held recently in Philadelphia, W. L. Rodman, who was the first to propose resection of the ulcer-bearing area in gastric ulcer, sounded a note of warning in reference to duodenal ulcer. He advocated the excision of the ulcer as well as the performance of the time-honored gastroenterostomy for its cure. This is a teaching which I believe to be sound, and one which will tend to lessen the appearance of cancer.

It has been shown that chronic appendicitis is a cause of *cancer of the appendix:* another nail in the coffin of the medical treatment of this purely surgical condition.

(To be concluded in the April issue.)

THE MEDICAL TREATMENT OF GASTRIC AND DUODENAL ULCER.*

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The modern practice of medicine depends so largely upon proper diagnosis that the study of symptoms almost overshadows the application of treatment. With respect to medication proper, advances are being made, but in the field of diagnosis the immediate future is rich in the promise of achievement which will give a greater insight into the exact nature of disease. Already the trained and skillful diagnostician has developed a well-defined specialty of his own, and he is consulted frequently in cases where conflicting symptoms leave the average practitioner puzzled how to proceed.

It is an elementary proposition that a careful and detailed diagnosis is necessary before one attempts to prescribe for the ordinary ailment or disturbance. Consider, then, how important and essential it becomes to develop, by careful study and observation, a thorough, comprehensive diagnosis of complaints such as gastric and duodenal ulcer, the presentation of which I

* Read at the Thirteenth Annual Meeting of the American Therapeutic Society, held at Montreal, Canada, May 31 and June 1, 1912.

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propose to bring to your attention in this short paper. An early diagnosis, such as has been suggested, at the very outset of the case is particularly desirable, because the conditions present, if not in aggravated form, may still respond to medicinal and dietetic treatment, which will probably give permanent relief; whereas the failure to diagnose until delay has permitted a chronic condition to develop may subject the patient to what he considers the dreaded surgical operation, with its possibly fatal consequences.

Only within recent years has it become possible to recognize, with any degree of certainty, the existence of gastric and duodenal ulcer. No longer are these conditions displayed as post-mortem curiosities; but now, with the aid of exact and searching diagnoses, we are able to effect cures in many instances, by medicinal or surgical means. I venture to say, from experience and observation, that in many cases of so-called neurasthenia the real seat of the trouble has been the particular form of ulcer under consideration, and that the failure to identify this condition through inaccurate or delayed diagnosis has driven patients to find expected relief in nostrums and patent preparations.

The treatment of gastric and duodenal ulcer is practically the same, and will be so considered; but in neither case can there be any specific treatment. The diagnosis having determined with reasonable certainty the location of the ulcer and its probable duration, the plan of treatment to be followed presents the final question; and incidentally, the problem how to maintain nutrition during that time has to be considered.

Our immediate concern, however, is with the character of the ulcer, for, according to the classification that I have adopted, we shall find it to be either acute, subacute, or of the chronic, indurated form. A word with respect to each for purposes of identification: The *acute* form is the ulcer accompanied by sudden hemorrhage, particularly where no history of previous digestive disturbances has been obtained. This would be the easiest form to diagnose were it not for the fact that incidentally it must be determined whether or not perforation has taken place. The *subacute* ulcer is generally indicated by its history to be of very short duration; still, this, as well as the last form, may present acute exacerbations and, with some of the classical symptoms of ulcer lacking, the diagnosis is apt to be overlooked. This ulcer of short duration generally responds to dietetic or medicinal treatment, and, although there be recurring symptoms, there is wanting the appearance of a progressive disease. The *chronic, indurated* ulcer is that form which has extended over a long period of time, and may be differentiated from the other forms by its persistent and progressive character, as well as by its resistance to all medicinal measures and failure to respond thereto. It must be apparent that the attempt to define sharply these forms of ulcer is extremely difficult and taxes to the utmost the resources of the clinician, but the endeavor should be persisted in with a view to determining the stage of the ulcer or its period of duration, so that the question of medical or surgical treatment can be definitely decided.

We are now concerned with the location of the ulcer, and we proceed to

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determine the position by its point of attack. In this way we may find the ulcer at the posterior wall, the lesser curvature, the pylorus, or the duodenum. Statistics are so varied that it is rather difficult to state definitely which parts are more frequently affected. If the location is at the pylorus and the duration has been sufficient to cause a beginning cicatrix with symptoms of stenosis, the only resort is to surgical operation; the same is true of the chronic, indurated form in other portions of the stomach, and medicinal treatment is of no avail. The finding of food remnants, sarcinæ, etc., with the stomach in a fasting condition, is usually evidence of stenosis of the pylorus due to the cicatrix of an ulcer. My experience has been that it is a waste of time and medicine to treat this condition medically.

With respect to operative methods to be followed there is a diversity of opinions among surgeons almost as great as there is among physicians respecting medical treatment. Whatever the method employed may be, we are interested in the fact that numerous cases in which operation was advised fully confirmed the previous diagnosis, both as to location of the ulcer and the length of its duration, thereby showing the absolute necessity of affording to the patients surgical relief.

We are more concerned at present, however, with the medical and dietetic treatment of ulcerative conditions, and also with the problem of maintaining adequate nutrition during certain phases of the treatment. On the one hand, we have numerous reports of cures from the so-called "feeding" method, the idea first proposed by Lenhartz having been followed, even in cases where hemorrhage is a concomitant symptom; on the other hand, we have just as many reports of cures from the so-called "starvation" treatment. Then there is the serum treatment, the method of injecting bacterial vaccines, and numerous other "ulcer cures," each with its own strong adherents. No doubt, each of the methods named has some particular virtue, but, instead of adopting any one of them, I have been led by experience in the treatment of ulcer to develop a distinctive routine procedure, with modifications to suit the individual case.

When I am fully satisfied that the conditions present point to the existence of ulcer, I order the patient to bed, and insist that he have absolute rest in the fullest sense of the word, mental and physical. No food at all is allowed by mouth for a period of from five to seven days, or sometimes longer, according to the progress of the case, which must be closely observed. Even if acute hemorrhage has taken place I am inclined to doubt the necessity of operating during that period, unless actual perforation is suspected and confirmed. Until the hemorrhage has positively ceased, I advise giving morphine hypodermically; an ice-pack should be placed on the abdomen, and if necessary the bowels should be moved by an enema. Under no circumstances should food by the mouth be permitted. In the absence of hemorrhage, hot applications in some form, preferably the electric pad, may be placed over the abdomen. This, I believe, tends to improve the intra-abdominal circulation, and thereby assists in the healing process. The bowels should then be moved by citrate of magnesia or Carlsbad salts, which also aid in the

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reduction of the acidity. After the bowels have been freely moved, 30-grain (2 Gm.) doses of bismuth subnitrate should be given, in combination with 7½-grain (0.5 Gm.) doses of magnesium hydrogen dioxide (25 per cent.), to be taken three times daily. In order to insure the retention of these drugs, it may be necessary to use small quantities of boiled water.

In the cases under consideration we are next confronted with the question, how to maintain nutrition during the treatment. I recommend immediate rectal feeding,—not that I believe rectal alimentation is adequate to supply

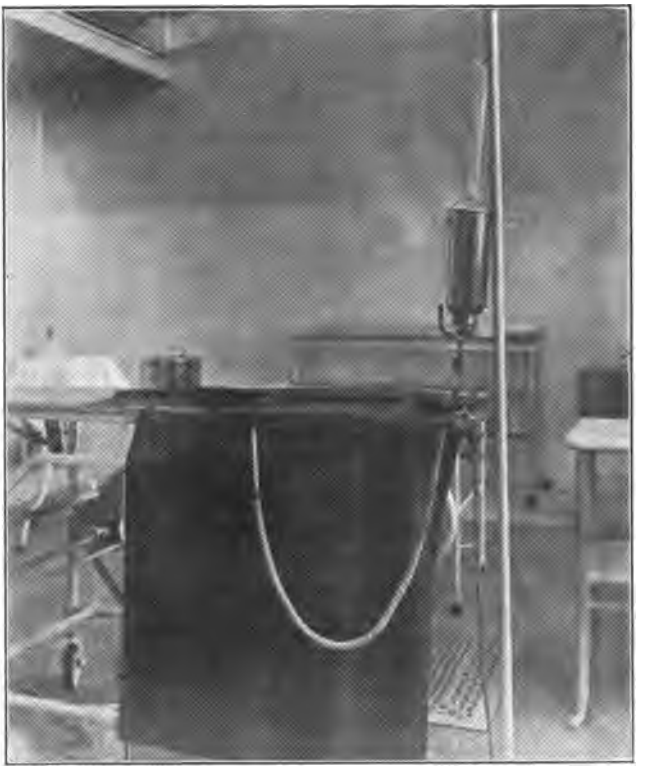

Fig. 1.—Rectal feeding apparatus.

sufficient nourishment for any considerable length of time, but because I have found by experience that it is useful in preventing the untoward effects of complete starvation. The composition of the nutrient enema to be used has aroused considerable discussion, and there already exists an extensive literature upon the subject. Such authorities as Edsall and Miller claim, as a result of their experiments, that fats and proteins are poorly absorbed by the rectal mucous membrane. My own experiments in rectal feeding incline me to the use of dextrose solution, and I have found that a considerable amount of this substance can be absorbed. The administration of solutions of dextrose, in the great majority of cases, has supplied sufficient nutrition to tide the patient over the required period of rectal alimentation. To 500 c.c. (1 pint)

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of normal saline solution there has been added 50 Gm. (1½ ounces) of dextrose, making a 10 per cent. solution of the latter. Every six hours this solution is introduced into the rectum at body temperature, according to the method which I shall presently describe. If the entire solution were absorbed, it would mean that 200 Gm. of dextrose, representing approximately 800 calories, would be supplied to the patient every twenty-four hours. My experiments have shown as high an absorption as 193 Gm. of dextrose, the

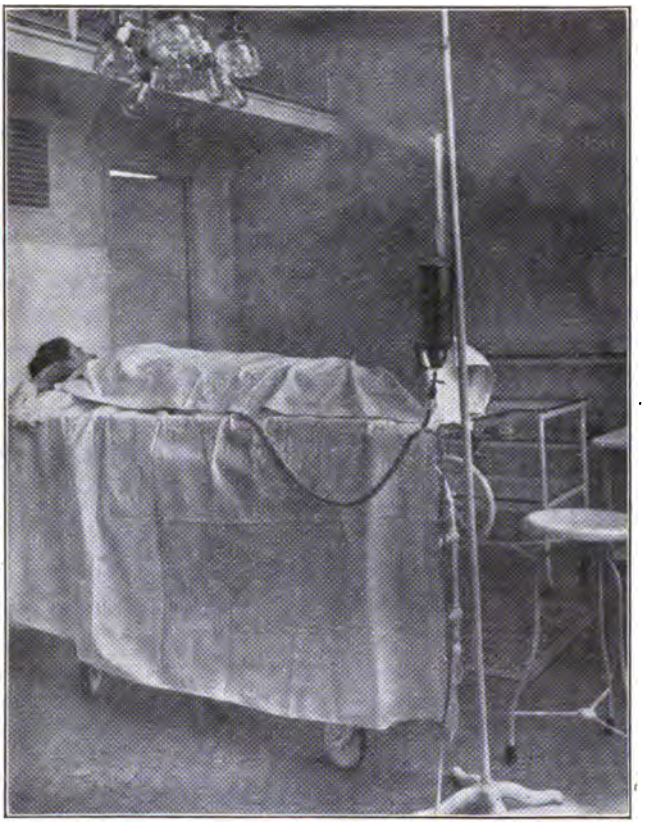

Fig. 2.—Apparatus in use.

equivalent of over 700 calories, or a little more than one-third the number of calories required to sustain the body at rest. I consider these results so gratifying that I do not hesitate to recommend the use of dextrose as indicated. Furthermore, it has been tried successfully in cases of ulcer at the Hospital of St. Raphael, New Haven, Conn., and likewise in many other instances where rectal feeding was necessary because no food could be taken by the mouth.

For the administration of these nutrient or saline enemas, I have designed a rectal feeding apparatus[1] which permits the solutions to be taken into the rectum at body temperature, according to the Murphy drip method.

[1] Manufactured by Knauth Brothers, New York City.

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This apparatus consists of an inverted caloris vacuum bottle, with metallic exterior case, suspended by a handle. The mouth of the bottle is fitted with a two-hole rubber stopper. One hole has a glass tube for the ingress of air inserted into it; the other has a glass T-tube as outlet. At the lower end of this T-tube is attached a soft-rubber tube for dispensing the contents. The side outlet is connected with a hook-shaped glass tube serving as a gauge glass and showing at all times the quantity of fluid in the bottle. The soft-rubber dispensing tube is attached to the glass drop chamber, wherein it is possible to see the quantity and rapidity in which the solution is dispensed; this is controlled by a special pressure device, which acts on the outer surface of the soft-rubber dispensing tube. Directly below the lower end of the glass drop chamber, a special glass connecting tube, with elbow, is inserted, the vertical section of which is somewhat smaller in lumen than the elbow. The object of this attachment is to admit of free passage of the solution to be used, whereas the elbow, through its upward turn and larger lumen, will admit of a still more free escape of such solutions and gases as may from time to time be expelled by the intestines. To control as accurately as possible the quantity of the solution injected, the white soft-rubber tube attached to the elbow referred to above is led half-way up to the top of the equipment, in order to offset the force with which the solution is ejected from the body. This tubing then leads into a basin. The soft-rubber dispensing tubing is of a maroon color, about four feet long, and is covered by a removable woven asbestos insulation, which prevents loss of heat from the solution passing through. At the distal extremity, this dispensing tube is intercepted by the insertion of a thermometer and ends with a glass conic nozzle onto which the catheter or other tube leading directly into the body is attached. The solutions are placed in the container, at boiling temperature, and delivered at body temperature. One feeding usually takes about three hours.

During the period of treatment, indications such as care of the bowels, relief of pain, of hyperacidity, etc., should be met as they arise. The return to feeding by the mouth should begin as soon as possible, according to the patient's condition. Great care should be taken, however, in the foods selected. I usually begin with small doses of albumin water, given several times daily. If this is well tolerated, oatmeal gruel which has been thoroughly cooked in a steamer and strained through cheesecloth is then given in small doses. For the sake of variety, a thick barley soup, strained, may be given. Some patients are able to take milk that has been diluted one-half with lime water, or peptonized, while others are unable to take it in any form. However, I am not overenthusiastic about the giving of milk in these cases. Thickened soups and scraped meats, broiled, may then be given. If the case progresses favorably, the diet may be gradually increased.

After feeding by the mouth has been started, rectal alimentation may be decreased or entirely stopped. It is extremely important to caution patients concerning their diet after they cease to be under observation, and I am in the habit of giving specific directions, in writing, regarding it.

Thus I have endeavored to present to you briefly my routine treatment

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of gastric and duodenal ulcer. I have investigated and experimented with various forms of treatment described in the textbooks, or which have appeared in current medical literature, but the results have not been encouraging. It may be urged that the rectal method is old-fashioned, but that objection does not detract from the value of the treatment, which has proven successful in a number of cases that have come under my personal observation. It possesses every advantage that can be claimed for any rational treatment. It is simple, can be given at the home of the patient, and causes him little or no discomfort. At all events, while waiting until a better or a specific cure for ulcer shall have been introduced and accepted by the profession, I have ventured to submit to you these few suggestions for what they may be worth, and in the hope that they may serve a useful purpose in affording relief to patients suffering from gastric or duodenal ulcer.

JUVENILE DELINQUENCY.

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Closely following the advance in methods of dealing with the youthful offender against law and order comes the realization by the enlightened sociologist of the close relationship existing between physical and mental degeneracy, between health and morals, and of the dependence that must be placed upon the physician in the solution of the problem of the juvenile delinquent.

Juvenile-court children are below the normal average in physical development. They are under height and under weight, and in a great many cases are suffering from malnutrition of a severe grade. The majority suffer from physical defects—defective vision, diseased or enlarged tonsils, adenoids, defective teeth, etc. Some are actually ill from tuberculosis, chorea, syphilis, or other venereal disease. Studies of the mental condition of juvenile-court children likewise show wide variations from the normal. Feeble-mindedness is common; epilepsy, especially in the psychic forms, is not unusual, and dementia precox and other forms of insanity are often encountered.

The detention room of a juvenile court consequently offers a fertile field for the study of the physically or mentally inefficient or abnormal at the period in which ameliorative or curative procedures are likely to prove most effectual. Every juvenile court should have in connection with its rooms of detention a laboratory for the mental and physical examination of every child. The expense of such a laboratory would be a considerable item, but the undertaking would in the end promote economy.

Such a laboratory should be under the supervision of a physician not only thoroughly trained in the clinical examination of children, but capable also of applying and interpreting the various psychological tests necessary

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properly to supplement the physical examination. It is preferable that the mental examination be made by the physician himself and not left, as there is a tendency at present, to a psychologist. Every well-trained physician is to some extent a practical psychologist, and, further, is peculiarly fitted by his medical training for the combination of the two functions, and is not handicapped by lack of medical training, as is the psychologist. Anthropological measurements should be made and recorded. Not only should a general examination of the body be conducted, but all the organs of special sense should be diligently examined and tested. The heart, lungs, and abdomen should also be carefully searched for evidence of disease. Where indicated, the urine, blood, etc., should be examined. Provision should also be made for the Wassermann and other tests. A careful examination into the mental condition should be conducted, and finally, after all facts known, including family, social, school history, etc., have been correlated, the diagnosis should be made.

The benefits of such an examination would be several. First: The immense amount of data available would be of inestimable value to sociologists, criminologists, physicians, and educators. Second: The diagnosis would be but the first step to treatment. Upon recommendation of the examining physician, cases should be referred to a consulting staff of specialists for treatment and operation. By improvement in physical health and correction of physical defects, many an individual would be made a useful member of society. Third: Those essentially incapable of adjustment to the standards of civilization,—the feeble-minded, epileptic, insane, morally degenerate, and unstable,—and who would without doubt at some time or other become a public menace, should be separated from those of normal mentality and either placed in suitable institutions or otherwise kept under proper supervision.

Such a laboratory in a large city would require the services of the supervising physician for the greater part of each day. He should be allowed all necessary assistants,—physicians and clerks,—to attend to matters of detail, records, routine examinations, etc. This is all expert service, which should be paid for accordingly.

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MODERN METHODS OF DRUG STANDARDIZATION.*

By F. E. STEWART, M.D., Ph.G.,

GERMANTOWN, PA.,

WITH THE COLLABORATION OF

A. PARKER HITCHENS, M.D.; W. F. ELGIN, M.D.; CHAS. E. VANDERKLEED, Phar.D., and P. S. PITTENGER, Phar.D.

(*Concluded from the February issue.*)

Standardization of Cardiac Stimulants and Depressants.

The most important plants which contain bodies whose physiologic action comes under this head are *Digitalis purpurea, Strophanthus hispidus* or *Kombé, Scilla maritima, Convallaria majalis, Apocynum cannabinum, Aconitum napellus, Veratrum viride* or *album,* and *Gelsemium sempervirens.* These drugs may be divided into two groups as follows:—

1. **Stimulants**
   - Apocynum.
   - Convallaria.
   - Digitalis.
   - Squill.
   - Strophanthus.
2. **Depressants**
   - Aconite.
   - Gelsemium.
   - Veratrum.

Several methods are available for the quantitative determination of the activity of these drugs and of their preparations, the three principal type methods being:—

1. A toxic method, in which guinea-pigs, frogs, and some of the higher animals are used,—such, *e.g.,* as Reed and Vanderkleed's Guinea-pig Method; Hatcher's Cat Method; Famulener and Lyons's "One Hour" Frog Method; Houghton's "Twelve Hour" Frog Method, and Focke's Frog Method.

2. The effect upon blood-pressure.

3. The effect upon the isolated heart of the frog or turtle. (*Example:* Perfusion method.)

1. Toxic Methods.—(*a*) *Guinea-pigs.—Reed and Vanderkleed's Method.*—This method consists in determining the minimum dose per 250 Gm. body-weight of guinea-pig that will prove fatal within 24 hours when the drug is subcutaneously injected.

Apparatus Necessary for Experiment.—One Hitchens's syringe, pipettes, graduated in $\frac{1}{100}$ c.c., scissors, scales and weights ranging from 1 to 500 Gm.

Animals.—Guinea-pigs in good physical condition and weighing from 180 to 400 Gm.

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* Read at the Thirteenth Annual Meeting of the American Therapeutic Society, held in Montreal, May 31 and June 1, 1912.

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Preparation of Experiment.—The guinea-pigs are prepared for the injection by clipping or shaving the hair from about 1 sq. in. of the skin over the abdomen, and painting the exposed portion with 5 per cent. tincture of iodine. The pigs are then weighed and records kept.

Preparation of Solutions.—If the preparation to be tested is a tincture or a fluidextract it should be freed from the greater part of alcohol by evaporation on the water bath, and diluted with normal saline solution to the desired volume. Solid and powdered extracts should be dissolved in a sufficient quantity of a suitable menstruum to render the doses accurately measurable. In all cases the preparations should be sufficiently diluted or concentrated, as the case may be, to make the dose injected measure not less than 0.5 c.c. nor more than 4 c.c.

Method of Injecting.—The injections are given subcutaneously in the abdominal region. The following illustration shows a very simple and handy method:—

Fig. 9.—Method of Injecting Guinea-pigs. *A* and *B*, glass body of Hitchens's syringe; *C*, detachable bulb; *D*, needle.

The Hitchens syringe shown in the above illustration is especially adapted for this work because it allows no possibility of loss while inserting the needle and may be washed with water without being withdrawn.

Method.—Pipette the desired dose of the preparation to be injected into the side arm (*B*) of the syringe; while holding the syringe with the side arm down, insert the needle as shown above; rotate the syringe to allow the liquid to run from *B* to *A;* insert rubber bulb (*B*) into neck of syringe and inject the liquid by applying pressure to the bulb with the thumb; remove bulb; wash the side arm with about 1 c.c. of water from a "sprütz bottle"; rotate syringe several times, replace bulb and inject wash-water; massage injected liquid away from the point of injection; withdraw needle.

Actual Standardization.—Inject into a series of four guinea-pigs $^{9}/_{10}$, $^{10}/_{10}$, $^{11}/_{10}$, and $^{12}/_{10}$ of the standard dose of the preparation to be standardized for each 250 Gm. body-weight of guinea-pig. Then place the animals in cages

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and allow them to remain for 24 hours, when they are to be examined and a note made of those living and those which are dead.

The results of this preliminary test, in which the range of dosage is quite wide, enables the investigator to form some idea as to the strength of the preparation. Basing the dosage upon these results, other series of guinea-pigs are injected with progressively increasing or decreasing doses, as the case may be, still further diminishing the variation between doses, until the smallest amount is found which will prove fatal within 24 hours. The probable minimum lethal (toxic) dose of the preparation, unless it deviates considerably from that of the standard, is generally obtained by one or two series of injections. In order to determine whether or not this is the true minimum lethal dose this result is checked by carefully injecting a new series of 4 pigs; 2 with the smallest dose that was found to kill, and 2 with the largest dose that did not kill. If any of this last series shows irregularities, further correction must be made.

In order to express the percentage results it is necessary to adopt for each drug or preparation assayed a standard minimum lethal dose with which the minimum lethal dose of the preparation being tested may be compared. After long experience we have adopted the following provisional standards for our laboratory:—

Tinctures.		Fluidextracts.		Solid and Powd. Extracts.	
Drug.	M. L. D.	Drug.	M. L. D.	Drug.	M. L. D.
Aconite Root.....	0.1	Aconite Root	0.01	Aconite Root ...	0.002
Aconite Leaves....	0.25	Aconite Leaves ..	0.025	Aconite Leaves..	0.00625
Digitalis	1.0	Digitalis	0.1	Digitalis	0.025
Gelsemium	2.5	Gelsemium	0.375	Gelsemium	0.1
Squills Acetic	0.75	Squills Acetic ...	0.5	Veratrum	0.015
Strophanthus	0.025	Squills Alco.	0.25		
Veratrum	0.5	Strophanthus ...	0.0025		
		Veratrum	0.05		
		Convallaria	0.075		
		Apocynum	0.075		

(*b*) *Cats.—Hatcher and Brodie's Method.*—This method consists in determining the minimal fatal dose per kilogram of cat when the drug is injected slowly into the femoral vein, the standard chosen for the digitalis group being the cat-unit.

Cat-unit.—The amount of crystalline ouabain which is fatal within about 90 minutes to a kilogram of cat when the drug is injected slowly and almost continuously into the femoral vein. A cat-unit is equal to almost precisely 0.1 mg. of crystalline ouabain, or one ten-millionth of the weight of the animal.

Apparatus Necessary for the Experiment.—Accurately graduated syringe or burette, cat-board, two graduated burettes. Operating instruments: scalpels, forceps, grooved director, hemostat, bulldog clamps, glass seeker, 2 small glass cannulas, and silk ligatures.

Animals.—Cats of medium size (1.5 to 4 kg.) in good physical condition.

Preparation of Experiment.—After weighing, the animal is completely anesthetized. This is best accomplished by one of the two following methods:—

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1. *Ether Anesthesia.*—The animal is placed in an air-tight box or bell-jar, into which is dropped a sponge saturated with ether; the animal is allowed to remain until all voluntary movements cease. It is then removed from the box or jar and fastened upon the cat-board, the anesthetic now being given on cotton covered with a towel, care being taken to cover the whole mouth of the animal.

2. *Morphine Acetone-chloroform Anesthesia* (Edmunds and Cushny).—The animal is placed in a box 35 cm. long, 18 cm. wide, and 18 cm. deep. The box is furnished with a sliding lid. A V-shaped cut is made in the end of the lid and in the corresponding end of the box, so that the animal may be securely clamped in this opening, allowing the head to protrude. The lid is fixed with a nail and then 40 to 60 mg. of morphine are injected with a hypodermic syringe into the skin of the neck. This is followed by 0.3 cm. per kilogram of acetone-chloroform dissolved in alcohol administered by the stomach-tube. As soon as voluntary movements cease the cat is removed from the box and tied upon the board.

Next an incision two inches long is made over each saphenous vein at its junction with the femoral vein and the tissues severed just enough to free about one inch of each. A short cannula of small bore, with rubber connection, is then tied into each saphenous vein close to its junction with the femoral vein and the vein clamped off with a small artery clamp.

Preparation of Solutions.—Two solutions are required,—*First,* the standard solution, prepared by carefully dissolving 0.1 mg. of crystalline ouabain per kilogram body-weight of animal in a sufficient quantity of normal saline solution to render it possible to measure accurately aliquot portions of this dose.

Second, the preparation to be standardized, which should also be carefully diluted with normal saline solution. If a tincture or fluidextract, it should first be freed from part of the alcohol present by evaporation on a water bath.

Methods of Injecting.—Two glass syringes, or, better, graduated burettes, may be used for making the injections. One marked *A,* for the standard solution, is fastened to the rubber connection of the cannula in one saphenous vein, while the other, marked *B,* for the solution to be standardized, is fastened to the cannula in the other vein.

Actual Standardization.[6]—"When crystalline ouabain, amorphous strophanthin, or a preparation of strophanthus is to be tested, it is only necessary to inject the solution from a syringe or burette into the femoral vein until the animal begins to show toxic symptoms. The injection is then interrupted, or continued more slowly until the unmistakable signs of approaching death are seen. These signs are so typical that one is rarely mistaken concerning them. They consist in irregularity of the heart, difficult respiration, convulsions, and frequently a peculiar cry, after which recovery is extremely rare. If death does not occur in a few minutes the injection is continued with extreme caution.

"Other members of the digitalis group may be tested in the same manner,

[6] Hatcher and Brodie method, Am. Jour. Pharm., p. 362, Aug., 1910.

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but, as a rule, the results will be somewhat too high, and in that case the necessary correction, usually amounting to about 20 per cent., may be made, or the assay may be made more accurately by a modification of the technique.

"Somewhat more uniform results are obtained if about 75 per cent. of the total amount of the digitalis body is injected in the first 15 minutes and the remainder in the following hour. These results will still be too high, and we have therefore devised a modification of the method of estimating some of the other digitalis bodies which give results that we believe to be nearly as accurate as those obtained with crystalline ouabain itself.

"Just as the analytical chemist may find it desirable to determine the alkalinity of a liquid by adding an excess of acid and titrating back with an alkali, so we have here been able to obtain more accurate results in some cases when we inject a measured amount of the digitalis body (tincture or infusion of digitalis or digitoxin) in the first period of 10 minutes, and after an interval of 20 minutes continue the injection, substituting a solution of crystalline ouabain for that of the digitalis body under examination, until the death of the animal, or until toxic symptoms appear.

"The difference between the amount of crystalline ouabain actually used to complete the assay and the 0.1 mg. per kilogram of animal (the amount which would have been required in the absence of the digitalis body) represents the activity of the digitalis used.

"The following example will illustrate the mode of computing the activity of the digitalis body tested: A tincture representing 70 mg. of digitalis per kilogram of cat was injected into the femoral vein and after 20 minutes the injection of a solution of ouabain was begun. The animal died with the typical symptoms of digitalis poisoning when 0.0142 mg. of crystalline ouabain per kilogram had been injected. The difference between 0.0142 mg. and 0.1 mg. (which would have been required had the ouabain been used alone) is 0.085 mg., or 85.8 per cent., of a cat-unit; hence, 70 mg. of digitalis equals 85.8 per cent. of a cat-unit, and 81.6 mg. of the digitalis equals one cat-unit."

(c) *Frogs.*—1. *Houghton's "12 Hour" Method.*—With this method the strength of the drug is determined by finding the minimum amount per gram body-weight necessary to cause the death of the animal within 12 hours.

Apparatus Necessary for Experiments.—One all-glass syringe or sharp-pointed pipette; frog-boards; forceps; scissors; scalpel, and a tank arranged for maintaining constant temperature.

Animals.—The frogs should be healthy, freshly caught, carefully handled, and kept in wet moss until they can be placed in tanks, with running water, in the laboratory. These storage tanks should be kept at a temperature of 10° to 15° C. This is a primary and important essential, as at the ordinary summer heat the frogs die *very* rapidly, while when kept at a temperature of from 10° to 15° C. death rarely occurs.

Another precaution in using frogs as assay animals is that the experiments should be carried out at the same temperature on account of the great susceptibility of the frog to heat. A temperature of about 20° C. is the best, because, being about ordinary room temperature, it can easily be maintained.

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This may best be accomplished at all seasons by means of a simple apparatus consisting of a large galvanized iron tank partly filled with water in which are placed the small cages containing the frogs. The temperature of the tank is raised or lowered by merely heating or cooling the water.

Since the dose is computed per gram of body-weight, frogs of any size may be used, but it is thought best to use those only of medium weight (20 to 35 Gm.) and of nearly uniform size, varying from one another not more than 5 Gm.

Any species may be employed, provided both the standard and the unknown preparation are tested upon the same species.

Preparation of Solution.—The preparation to be tested is diluted with a sufficient quantity of normal saline solution to make the doses injected measure about 0.5 c.c.

Method of Injecting.—The injections are made into the abdominal lymph-sac by means of an all-glass syringe or a sharp-pointed pipette.

Actual Standardization.—The general procedure is essentially the same as that given for Reed and Vanderkleed's guinea-pig method, differing only in the two following points: 1. The results are recorded at the end of 12 hours instead of 24 hours. 2. The minimum lethal dose is expressed in terms of grams per gram body-weight instead of in grams per 250 Gm. body-weight.

2. *Famulener and Lyons's "1 Hour" Method.*—This is considered by most workers to be the best of the frog methods. It consists in determining the minimum dose of the drug that will cause permanent systole of the frog's ventricle at the end of exactly one hour.

Apparatus Necessary for Experiment.—Same as under Houghton's "12 hour" method.

Animals.—In addition to the precautions given under Houghton's "12 hour" method, Famulener and Lyons have suggested that, since frogs are markedly influenced by external surroundings, temperature, season, relation of time of injection to time of feeding, etc., it is advisable to guard against the possibility that the frogs used for any particular series of experiments might be above or below the average susceptibility by standardizing each lot before they are used for assay purposes. For this purpose most workers have adopted crystalline ouabain. When a new lot of frogs is received a test is made by injecting one frog with the standard "minimum dose" of ouabain, fixed by previous experiments, to another 10 per cent. more, and to a third 10 per cent. less, than the standard dose. If the result of this experiment shows that the frogs are not of normal susceptibility it is then necessary to determine the minimum dose for this particular lot of frogs and to correct all succeeding assays accordingly.

Preparation of Solutions.—The method of preparing the solutions for injection is the same as that given for Houghton's "12 hour" method, except that the authors of this method advise that in all cases care shall be taken that the solvent is of the same alcoholic strength, as a certain amount of alcohol is necessary, in many cases, to effect solution of the substance injected.

Method of Injecting.—The solution to be tested is accurately measured by

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means of an all-glass syringe or sharp-pointed pipette. The floor of the mouth under the tongue is then punctured and the contents of the syringe or pipette delivered directly into the anterior lymph-sac of the animal.

Actual Standardization.—Select and carefully weigh a series of four healthy frogs of approximately standard weight (40 Gm.). Inject them as described above with $^{9}/_{10}$, $^{10}/_{10}$, $^{11}/_{10}$, and $^{12}/_{10}$, respectively, of the standard dose of the preparation being tested for each 40 Gm. body-weight of animal. The animals are then placed in cages in the tank (previously regulated to maintain a temperature of 20° C.), and allowed to remain there for about 55 minutes. They are then removed, pithed (both brain and cord), tied to frog-boards, and the thorax laid open so as to expose the heart. If this is already completely paralyzed, the dose has been excessive; if the pulsation still continues, although at a diminished rate, the dose has been insufficient. Basing the dosage upon these results, other series are then injected with progressively increasing or decreasing doses, as the case may be, still further diminishing the variation between doses until the minimum amount of the drug, per 40 Gm. body-weight of animal, is found which will just cause paralysis of the heart's action in one hour.

The authors of this method designate their "minimum dose" as the smallest amount of the drug which, in one hour, will produce the following typical condition[7]:—

"The apex of the ventricle is paralyzed, but at the base (region of the auriculoventricular system) there is occasionally a very faint contraction, indicated only by a color wave which is noticed quite commonly to have its origin at the left base of the ventricle, passing thence across the ventricle, while the auricles are much distended but continue to pulsate regularly." The activity of the preparation tested is then computed between the "minimum dose" of the preparation tested and the "standard minimum dose" by simple proportion.

Some slight modifications of this method have been adopted by various workers with the idea of securing greater accuracy,—the most important of which are: First, that the assays should all be carried out at constant temperature. Second, that the "minimum dose" should be the smallest amount of the drug which, in one hour, will produce the following condition: The heart is paralyzed, but when stimulated by touching it with the end of a pair of forceps or scissors it will respond with an additional contraction. If the heart will not give this "contraction on stimulation" the dose has been excessive; if it still pulsates the dose has been insufficient.

3. *Focke's Method.*—With this method the heart is exposed *before* the injection of the drug. The strength of the preparation "V" is determined by means of a formula in which the weight of the frog is divided by the dose multiplied by the time, in minutes, required to complete the reaction.

Apparatus Necessary for Experiment.—Same as under Houghton's "12 hour" method.

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[7] Famulener and Lyons, Proceedings of the Amer. Pharm. Assoc., p. 417, 1902.

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Animals.—Frogs in good physical condition, which have been in captivity not less than three days and weigh between 25 and 30 Gm. They are not to be collected before the end of June and should be kept in tanks supplied with water.

Preparation of Experiment.—Six hours before carrying out the actual standardization several frogs of about standard weight (25 to 30 Gm.) should be removed from the tank and placed in jars in the laboratory and kept at a temperature not exceeding 17° C.

Preparation of Solutions.—The solution to be injected is prepared by making a 10 per cent. infusion of the drug.

Method of Injecting.—The injections are made by means of an all-glass syringe or sharp-pointed pipette into the two leg lymph-sacs.

Actual Standardization.—An unpithed frog is fastened to the board and the heart carefully exposed in the usual manner without causing any loss of blood; 0.25 c.c. to 0.35 c.c. (about one-fortieth of the weight of the frog) of the infusion is then injected into the lymph-sac of each leg. The heart is then watched and the time required to cause systolic stoppage is noted. This is usually from 7 to 15 minutes. If the heart stops in less than 7 minutes, the dose has been too large, while if it continues to pulsate after 20 minutes it has been too small.

Basing the dosage upon the result of this primary experiment, other frogs are injected with larger or smaller doses, as the case may be, until four are found in which the heart has stopped between 7 and 15 minutes. The frogs are then pithed and weighed.

The toxic value of the preparation (V) is then determined by means of the formula $V = \frac{P}{d \times t}$, in which (P) represents the weight of the frog, (d) the amount of the drug injected, and (t) the time in minutes required to complete the reaction.

The relative strength of the preparation tested may then be expressed in percentage by comparing the (V) as determined by the experiment with the standard (V) adopted for that particular drug.

Focke states that the most concordant results are obtained if the experiments are carried out during the months of July, August, and September, but that accurate results for standardization purposes may be obtained at any season of the year if the animals are previously standardized and all subsequent assays corrected accordingly.

2. Blood-pressure Method.—*Apparatus Necessary for Experiment; Animals; Preparation of Experiment; Method of Injecting.*—Same as given under standardization of epinephrin.

Preparation of Solution.—All preparations to be tested should be diluted with normal saline solution to tincture strength, tinctures and fluidextracts first being freed from the greater part of alcohol by evaporation on a water bath.

Actual Standardization.—The blood-pressure tracing is started on a

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slowly revolving drum. After obtaining a tracing of normal pressure several inches in length the drum is stopped and 1 c.c. of the preparation to be tested is injected into the femoral vein. Another similar injection is given, after allowing from 1½ to 2 hours to elapse, in order that the effects of the previous injection may partially pass away. As the action of this class of drugs is prolonged and cumulative, more than two injections should never be given to the same animal, because the first injection always modifies the succeeding injections. Three or four dogs should be used and the average percentage rise of blood-pressure taken as the figure of potency.

The immediate rise produced by subtoxic doses is never marked, in many cases being so slight that a variation of 15 or even 20 per cent. in the size of the dose injected produces no measurable difference in the resultant rise. This method is, therefore, useful only for *roughly* determining the quantitative activity of a preparation, and does not give results sufficiently accurate to permit its being used for standardization purposes.

Standardization of Small-pox Vaccine.

It will be readily seen that the standardization of small-pox vaccine cannot be accomplished in the same way nor does it mean the same thing as the standardization of other biological products such as diphtheria antitoxin, tetanus antitoxin, and the various bacterial vaccines. The reason for this will be obvious when we recall that we have no means of isolating the active principle of small-pox vaccine; nor, in fact, has the specific agent been absolutely determined. Two points, however, are to be borne in mind in discussing this problem:—

1. The potency of the virus.
2. Its purity.

POTENCY.

The potency is determined by various methods in different institutions. All these methods depend, however, on the production of the specific lesion in some susceptible animal. Our method is to use the calf as the determining factor. A sample of the vaccine to be tested is inoculated in linear incisions about four inches long and the virus rubbed in on the scarified surface. The incisions are about one inch apart, each representing a sample of a virus. The calf remains in the incubating stable for about six days, just as in the ordinary procedure of vaccine productions. At the end of that time an inspection is made and the material used in each test graded, thus: "A," "B," "C," "D," "E," "F," and "G." No virus is allowed to issue from the laboratory which does not grade at least "C" on the last test.

PURITY.

The active principle of vaccine virus apparently develops in the epithelial cell. The time required for cultivation on the calf is from four to six days. Germs from external sources may therefore come into direct contact with the

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vesicle, their number and character depending somewhat on the surroundings. The skin, moreover, appears to be the normal habitat for certain cocci and occasionally other bacteria as well. Virus growing in the skin of the animal for six days is thus open to these two sources of infection. Contaminations of this character were called by Copeman "extraneous organisms," meaning that they have nothing to do with the production of the specific disease known as "cow-pox," though they may or may not affect the character of the vesicle. It is naturally important that we should determine whether these organisms are pathogenic or not. The following method is employed for this purpose:—

A sample of the vaccine is tested aërobically by the usual plate-culture method and the number and character of the germs noted. Samples of any bacterium which may be pathogenic to animals are isolated and tested. No virus is allowed to issue until pathogenic germs are eliminated.

Anaërobe Tests.—As is well known, some years ago several deaths were reported from tetanus following vaccination. Since that time careful and elaborate tests have been made on all vaccine issued, to insure the absence of this germ, but up to the present none has been found by any of the laboratory investigators in the United States. Careful routine testing for this organism is, however, of extreme importance.

Different methods are used by the various laboratories, but all depend upon two factors:—

1. A microscopic examination for a round "end-spore" bacillus, growing anaërobically.

2. Examination for the presence of a powerful toxin produced by this germ, as determined by injection in various susceptible animals.

The test is made in the following manner: 10 c.c. of each batch of virus is grown in appropriate culture media under anaërobic conditions for ten days or longer, when a microscopic examination is made. Whether the characteristic bacillus is found or not, the culture is filtered, 5 c.c. of the filtrate inoculated into a guinea-pig subcutaneously, and the animal held under observation for ten days or longer.

Control Test.—In addition to the tests already noted, a given quantity of glycerinated virus is directly inoculated into an animal, which is kept under observation for one week or longer. This test is intended as a control.

All of these tests are duplicated by another department working independently, and the results must tally before a given batch of virus is allowed to issue.

STORING OF VIRUS.

After the virus has been prepared and tested by the methods above noted, it is stored at from 8° to 12° C. Investigations made at this laboratory some eight to ten years ago proved that virus could be kept indefinitely provided it be stored at at least 8° C.

For this reason the virus is made in winter, when the weather is most favorable for its production. It is then put in the cold at the temperature noted and can be drawn on even during the hot weather.

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This was recently exemplified during the epidemic in Pittsburgh, when over 270,000 doses of vaccine were forwarded in one week, which would have been impossible under the present complicated methods of testing without cold-storage facilities.

Two points need to be emphasized in this connection: (1) Virus is quickly killed by even a short exposure to summer heat; so that as little as possible should be held in stock in drug-stores during that season, and, where possible, fresh material direct from the laboratory used. (2) Vaccine cannot be stored *too cold,* and should at least be kept directly on the ice, as being the coldest place obtainable.

DATING OF VACCINE.

Virus is dated in order to comply with government requirements. A moment's thought will convince anyone that this is largely arbitrary, and that perfectly active virus may be "out of date," while, on the other hand, virus may become absolutely inactive because of exposure to unfavorable conditions, with a large time margin left. The only safe method to pursue is to use the vaccine as soon after it is issued from the laboratory as possible, particularly in hot weather.

EFFECTS OF HEAT ON VACCINE.

In order to emphasize what has just been said, attention is called to the following chart, which shows the life of vaccine at different temperatures:—

Degrees Centigrade.	Degrees Fahrenheit.	Duration of Exposure.	Result.
60	140	5 minutes	Killed.
55	132	5 minutes	Weakened.
37	98	3 to 4 days	Killed.
21	70	1 to 3 weeks	Weakened.
10	50	3 to 6 months	Active.
—12	10	4 years	Active.

METHODS OF VACCINATION.

Two points require emphasis in this connection:—

1. *The Depth of Scarification.*—Various operators have suggested different methods, such as the puncture, linear incisions, scarification, and the hypodermic method, but in the use of any of these methods care should be taken only to pierce the epidermis. *Draw no blood.*

2. *The size of the scarifications* is emphasized, particularly abroad, it being claimed by the Local Government Board of England that one-half square inch is necessary to give full protection. This is usually accomplished in England by four insertions. In this country one scarification is usually considered sufficient, but it often happens that the physician covers more than one-half square inch in making it.

SUBSEQUENT CARE OF THE VACCINATION SITE.

Attention has already been called to the fact that tetanus occasionally follows vaccination. It also sometimes happens that infection follows owing

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to carelessness or the presence of dirt, or to breaking into the vesicle through some accident. Should this latter happen, infection might easily result, and in fact a number of cases investigated seemed to show that the tetanus organisms had entered in this way. We would therefore specially call attention to the fact that the vaccination site should be protected by some means from external contamination. If a shield is used it should be frequently removed and the surface beneath cleaned. The shield should not press on the inflamed area.

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DISCUSSION.

Dr. Oliver T. Osborne, of New Haven, Conn., said that he had watched Dr. Stewart's efforts with the greatest interest. They were certainly needed, for the general opinion among physicians seemed to be, that all that was necessary was to write out a prescription, and the Lord would do the rest. Now that we saw something of what Dr. Stewart had done, we should fight in company with him. He himself was a member of the Committee on Scope in the preparation of the next issue of the United States Pharmacopeia, and this committee had fixed upon, without discussion, a very few drugs for admission to it—not more than 12. But, by the time that the work had got through all the various other committees, it would be found that the new Pharmacopeia would contain, as heretofore, a quantity of perfectly useless drugs, mostly at the instance of pharmaceutists who urged that some physicians continued to order them.

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If one desired to prescribe tincture of saffron, for instance, why could he not go back to some issue of the U. S. P. in which it was official? Our Pharmacopeia was the most antiquated medical book in the world—purely medieval. As instances of its medieval character might be mentioned the compound cathartic pill, of which the surgeons were so fond, and the good old-fashioned brown mixture. In spite of all this, Dr. Stewart's efforts would finally triumph, and his work would be manifest in future Pharmacopeias.

Dr. Charles E. de M. Sajous, of Philadelphia, said that at the annual banquet he had emphasized the need of courage and perseverance, regardless of criticism and opposition, in pursuing original lines of research or thought which one believed to be of value to human welfare. This applied to the class of work in which Dr. Stewart had so long been engaged. For thirty years he had patiently emphasized the importance of drug standardization and the profession had been gradually learning to appreciate the practical value of carefully standardized drugs. Nothing would so paralyze our efforts as to have to fight disease with impotent or inferior weapons. Last winter in the course of work on the standardization of tincture of digitalis in Dr. Sajous's laboratory it was found necessary, on account of deterioration, either to increase the dosage at very short intervals or to obtain fresh tincture. To devise the best means to ascertain the actual value of all drugs subject to change would alone afford the physician the possibility of giving serious aid by judicious employment of these drugs. It was a humane work therefore in which Dr. Stewart was engaged, and the speaker hoped that the Society would give Dr. Stewart all the encouragement and assistance in its power.

P. S. Pittenger, Phar. D., of Philadelphia, said that, in addition to what Dr. Stewart had stated as to the necessity of standardization, he wished to present a very convincing table showing the variation in physiologic activity, *before standardization*, of some U. S. P. preparations assayed during the past year in their laboratory. Everyone present had no doubt either seen or heard of the wide variation in the activity of unstandardized galenical preparations and in the crude drugs themselves. He found, however, that most physicians did not realize the wide range of this variation, and therefore thought the members of the Society would be interested in hearing some *actual laboratory results* upon the subject:—

Drug.	Number of samples assayed.	Variation (percentage).
Digitalis tincture	51	30 to 444
Digitalis fluidextract	16	26 to 160
Digitalis solid extract	7	29 to 100
Ergot fluidextract	17	0 to 310
Aconite leaves tincture	6	38 to 111
Aconite root tincture	12	33 to 363
Aconite root fluidextract	7	52 to 266
Aconite root solid extract	10	6 to 166
Aconite root powdered extract	11	5 to 100
Cannabis indica fluidextract	15	40 to 150
Cannabis indica solid extract	4	71 to 125
Gelsemium tincture	7	64 to 156
Gelsemium fluidextract	7	65 to 220
Gelsemium powdered extract	3	88 to 187
Strophanthus tincture	12	55 to 277
Squill fluidextract	18	71 to 153

Supplementing Dr. Sajous's remarks on the rapid deterioration of digitalis preparations, he would like to announce, before publication, the condensed results of one of his recent investigations into the subject of ergot deterioration. This was an exceedingly important consideration for the therapeutist, for, as Dr. Vanderkleed had said in his section on Chemical Standardization, "Of what use is standardization to the physician if the carefully adjusted preparation shall have lost part or all of its

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activity before it is placed in his hands for use? Fortunately, only a few drugs and their preparations are subject to rapid deterioration. While no preparation should be looked upon as permanent, and freshness is always desired, the preparations of most of the alkaloidal drugs are quite stable and fluidextracts of such drugs as belladonna, nux vomica, cinchona, ipecac, and opium will remain potent and reliable for years, if kept tightly stoppered in a cool place. On the other hand, digitalis, strophanthus, and ergot preparations, *particularly the latter*, deteriorate quite rapidly under the ordinary conditions under which galenical preparations are kept." In the case of ergot the activity became greatly impaired in many instances in from two to three months. As all know, the subject of ergot had for a long time occupied the minds and attention of various workers, but until the present time no one had succeeded in devising a method by which manufacturers of preparations of ergot could put this product on the market in a form which would remain stable for a definite time. Most of the workers had claimed that, when tightly corked, preparations of this drug had been found to retain their original activity much longer than when loosely corked. This fact led him to believe that *air* must be the cause of this deterioration. Ordinarily, the evaporation of the menstruum would tend to increase rather than decrease the strength of a preparation. Accordingly, a little over a year ago he had started an experiment with ergot in order to prove the truth of his theory that *air* was the principal cause of deterioration:—

First, he secured a sample of fluidextract of ergot and tested it physiologically, finding that when injected into dogs in doses of 0.08 c.c. per kilo it produced an average rise in blood-pressure (from 5 injections, into several animals) of 45 mm. This was then divided into four portions, which were kept for one year in the laboratory in the following manner: The first portion was put up under vacuum in tubes specially designed and made by him for this purpose. The second portion was filled into bottles which were tightly corked and remained for one year unopened. The third portion was filled into bottles which were kept loosely corked for one year. The fourth portion was tightly corked, but opened occasionally throughout the year. After three months a test was made of the fourth portion (opened occasionally), which showed a deterioration of 37 per cent., producing only a 30-mm. rise in blood-pressure, instead of 45 mm., as when originally tested. A second test was made of this portion at the end of nine months, when it was found to possess only 42 per cent. of the original activity, *i.e.*, to show a deterioration of 58 per cent. It produced a rise in blood-pressure of only 20 mm. instead of the 45 mm., as when originally tested. At the end of a year all four portions were tested, with the following results:—

How kept.	Number of injections.	Average rise of blood-pressure.	Average fall of blood-pressure.
In vacuum	9	49.1 mm.	8.7 mm.
Tightly corked	5	29.8 mm.	12.0 mm.
Loosely corked	4	16.5 mm.	34.5 mm.
Tightly corked, opened occasionally	3	15.0 mm.	40.0 mm.

The chemical assay gave the following results:—

How kept.	Date tested.	Results.
Original sample	5—6—11	0.163% total alk.
In vacuum	5—6—12	0.168% total alk.
Opened occasionally	5—6—12	0.076% total alk.

It could thus be seen that by adopting the vacuum method of putting up ergot the rate of deterioration can so be retarded as to make this product one of stable

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quality for at least a definite time. This method would make it possible not only to supply the physician with a preparation which would maintain its "standard strength," but also enabled the experimenter to preserve a standard preparation with which he could compare the strength of new lots of drug and their preparations, and thus adjust them to "standard strength."

Dr. Sajous said he had found that he could preserve his liquid adrenal preparations very well by keeping them covered with a layer of oil, to prevent oxidation; otherwise their tendency was to change color and become inert. He remarked that every plant resembled our blood, *i.e.*, that its fluid contained an organic ferment which, acting as a catalyzer, had the ability to absorb oxygen and to sustain metabolism in the plant cells by surrendering its oxygen to them.

Dr. Francis M. Pottenger, of Los Angeles, Cal., said it would appear that at last we were getting some light on this subject. It seemed to him that if we could get a dozen or two drugs on a really scientific basis it would be a great gain. This, however, could be accomplished only by continued specialized work. For fifteen years he had been working on tuberculin, but many of the preparations of this he had not attempted to try. He had been content to perfect himself in the use of some half a dozen tuberculins, and he now knew just what each of these could do. In regard to digitalis, he had been interested in Mackenzie's work, and in the report of a recent lecture by him he had noted that this authority said: "Use digitalis and push it till you get its physiological effects." This he had followed with varying dosage, but good results. It would not do for us to be mere machines. We must individualize and study each case separately, as had been so well brought out in the discussion on diabetes. Therapeutics would take a better position if more attention were paid to the physiologic action of remedial agents, and it devolved on us to do all that we could to place this branch of medicine on as firm a basis as possible.

Dr. H. Beaumont Small, of Ottawa, said it was to be regretted that, while all felt so strongly on this matter, nothing practical had been done by the Society to assist in materializing Dr. Stewart's ideas. He would, therefore, suggest that the subject be referred to the Council, with the request that it bring it to the attention of the U. S. P. revision authorities and of the American Pharmaceutical Association.

A motion was made that Dr. Stewart's paper be so referred. An amendment was offered to the effect that it should be referred to the Committee on Therapeutic Research, which should confer with Dr. Stewart as to the best steps to be taken, and this was unanimously carried.

Dr. Stewart, in closing, expressed his grateful appreciation of the handsome endorsement which the members of the Society had given his efforts. One thing had been lost sight of, and that was that such work must be done under commercial auspices, for the problems involved in drug standardization were commercial as well as professional. Furthermore, the great commercial houses engaged in the pharmacal and chemical industries were in a better position to promote original materia-medica research than educational institutions or even government laboratories, because their operations are conducted on a large scale. And the experience of their experts, owing to their large operations, was correspondingly extensive; consequently they were in a position to speak with greater authority. The commercial interests, however, should not be permitted unlimited power in the matter, but should be carefully held in check by the professional societies. To accomplish this the experts connected with the scientific departments of these houses should be invited to fellowship, and through them the houses be held accountable. In this way the societies could avail themselves of the great facilities of the houses and their experts without danger of commercial exploitation.

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PHILADELPHIA MEDICAL SCHOOLS ADOPT A HIGHER STANDARD.

ALL the Philadelphia medical schools have adopted not only the higher entrance requirements recommended by the American Medical Association, but also those of the Board of Examiners of the State of Pennsylvania. As matters will stand on and after January 1st of next year, Jefferson Medical College, the Temple University Medical Department, the Medico-Chirurgical College, the Woman's Medical College, and the Hahnemann Medical College will require for admission, in addition to the work in an accredited high school, one year of college work in physics, chemistry, and biology, and also one foreign language. The University of Pennsylvania, however, will continue to require two years' preliminary work including these branches. Besides this preliminary work and the four years of strictly medical work, the student will be required to spend one year in a hospital as interne. Six years' work will thus be required by all the Philadelphia schools, with the exception of the University of Pennsylvania, which will require seven years.

While the University and Temple University already possess fully equipped departments to teach biology, chemistry, physics, and foreign languages, the other schools named are to create such courses. The four-year course will still be available for those who matriculate in the above schools (excepting the University of Pennsylvania) next September, but this will be the last opportunity.

Cyclopedia of Current Literature

CORPUS LUTEUM ORGANOTHERAPY.

From a careful study of the literature and the observation of patients, the author believes that the following conclusions formulated by Morley are justifiable: The ovary possesses an internal secretion. This internal secretion is produced by the corpus luteum. In so-called ovarian insufficiency, relief may be obtained with an extract of the corpus luteum. No untoward symptoms result from its use in conditions where it is indicated, even if no relief is obtained. The extract should be given a fair trial before it is discontinued. The extract used should be one that has been carefully prepared. All glands that possess an internal secretion are more or less intimately connected. Wilmer Krusen (American Journal of Obstetrics, October, 1912).

CREOSOTE CARBONATE IN PEDIATRICS, USES OF.

The author praises the action of this drug in loosening the secretions of the respiratory tract and states that it appears to him to have direct bactericidal properties. In pneumonic processes in children he has often seen the temperature fall 1° to 1.5° C. (1.8° to 2.7° F.) after a single dose. The drug should be continued at increasing intervals until the temperature has returned to normal. Even such serious general symptoms as somnolence and delirium are favorably influenced, notably in cases of bronchopneumonia. Obstinate cases of chronic

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bronchitis were also seen to be greatly improved by creosote carbonate. A frequently useful property of this drug is that of increasing the appetite. Up to the age of 1 year the author gives 5 drops, or 0.5 Gm., of creosote carbonate three times daily; up to two years, 10 drops, or 1 Gm.; in the third and fourth years, 15 drops, or 1.5 Gm.; in the fifth and sixth years, 20 drops, or 2 Gm., and in the seventh to the tenth years, 25 to 30 drops, or 2.5 to 3 Gm. The drug should be continued in doses one-half as large as those previously administered for a week after the auscultatory signs have disappeared. Children readily take it in a spoonful of warm milk. It is to be remembered that the urine may show an olive-green tint during its administration. Hunäns (Medizinische Klinik, September 29, 1912).

DUCTLESS GLANDS, EFFECTS OF, UPON GROWTH AND METABOLISM.

Experiments were carried out by the author on groups of white rats fed on a normal diet of bread and milk, to which, after a certain preliminary period, small quantities of the glandular substance of the ovary, pituitary body, or thyroid were respectively added. Determinations were made in each group of the rate of growth, the amount of food consumed, the amount of nitrogen excreted and retained, and the amounts of phosphorus, calcium, and magnesium excreted. It was found that the addition of ovarian or pituitary tissue in small amounts to the normal dietary of growing rats has little or no effect on their growth or metabolism. Addition of similar amounts of thyroid tissue causes a great increase of food consumption, especially in quite young animals, with acceleration of growth and retention of nitrogen in the body. At the same time the nitrogenous metabolism is greatly increased, as is indicated by the large augmentation of nitrogen in the excreta, especially in the urine. Certain differences are observable in the two sexes. The excretion of phosphorus appears to be uninfluenced by ovarian or pituitary addition, but there is an increase with thyroid when the addition of this to the food is increased beyond a certain amount. There appears to be an increased excretion of calcium and magnesium in pituitary- and thyroid- fed animals as compared with those to the food of which ovarian tissue is added, but the variations in the different experiments on this point were considerable. E. A. Schäfer (Quarterly Journal of Experimental Physiology, vol. v, No. 3, 1912; Lancet, November 23, 1912).

DYSENTERY IN INSTITUTIONS, TREATMENT OF.

The author discusses the treatment of that form of dysentery which makes its appearance and is quite apt to be epidemic in prisons, almshouses, asylums, and other State institutions. The patients have usually had a diarrhea for two or three days of which they said nothing, or thought little about, until they noticed some blood or "jelly-like stuff" in the stools. This is usually accompanied by sharp, griping pains and tenesmus.

The patient should be isolated if possible and put to bed. The treatment is then begun by giving 1 grain of calomel at once; the author prefers the tablets flavored with wintergreen, for they prevent in a measure the feeling of nausea that sometimes arises from the administration of plain calomel. After two hours the patient is given a teaspoonful of the following "acid diarrhea mixture":—

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℞ Acidi sulphurici diluti, ℥iij (12 c.c.).
Tincturæ cardamomi compositæ, ℥j (30 c.c.).
Aquæ, q. s. ad ℥viij (250 c.c.).
M. Sig.: One teaspoonful every two hours during the disease.

In conjunction with this he is to take 1 tablespoonful of olive oil every two hours, but no other drugs or food. Plenty of boiled water is given at frequent intervals. Exceptions may be made in the aged, debilitated, or arteriosclerotic by giving, in addition, a teaspoonful of brandy every three hours.

With more sturdy physique than those found in the almshouse, this treatment proved very efficient. In the majority of cases the discharges ceased in from two to three days. The period of bed rest was shortened from weeks to a few days, the patient was eager and ready for food, and convalescence was brief. Henry A. Jones (Journal of the American Medical Association, January 4, 1913).

EPINEPHRIN IN TREATMENT OF URTICARIA.

In 6 cases of urticaria treated by the author with subcutaneous injections of epinephrin, the injections were followed by a rapid disappearance of the edema and wheals. In each case a dose corresponding to about 8 minims (0.5 c.c.) for an adult of 140 pounds was given hypodermically, and the dose repeated in ten minutes. Two doses sufficed in every instance to cause complete fading of the rash. Improvement was usually evident eight minutes after the initial dose, and was most marked between ten and twenty minutes, during which time, especially in the severe cases, the rapidity with which the eruption subsided was very striking. After twenty minutes there usually remained some erythematous blotches, or small, pale wheals, which continued to fade until the skin looked entirely normal. All itching ceased in from five to twenty minutes after the first dose. If the exciting cause of the urticaria is still sufficiently active the wheals, the author believes, will recur in an hour or two unless the treatment is continued. The condition might be relieved for longer periods, or even permanently, by repeated and properly regulated doses.

From the results obtained it seems to the author probable that in these urticaria cases the vessels in the wheals are in a state of optimal tonus for the action of epinephrin, and that on them the drug has an unusual and selective effect. In contrast to asthma, however, the rise of blood-pressure which occurred was in most cases greater than usually follows subcutaneous injections of epinephrin in other types of disease, or in health, and may have been due to a generally relaxed condition of the arterial tree, which one would expect to be present in such cases. In every instance but one the wheals began to fade soon after a marked rise in pressure had occurred, and continued to fade while the pressure was still rising or still above normal. Since, however, in one case the rash nearly disappeared before any rise of blood-pressure took place, and in most of the cases the wheals did not reappear for some time after the pressure had again fallen to its starting point, it is by no means certain whether the disappearance of the rash depends entirely upon the local contraction of the vessels or whether it also depends in part upon some other process.

It is suggested that epinephrin might be used to advantage in certain more serious yet similar conditions, such as angioneurotic edema in its various

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forms, edema of the epiglottis or larynx, and anaphylaxis with severe bronchial spasm and edema. A. W. Swann (American Journal of the Medical Sciences, March, 1913).

EPISTAXIS, SIMPLE METHOD OF ARRESTING.

The author has frequently had success with the following procedure, originally suggested by Naegeli: The patient sits upright in a chair, and the operator, standing behind him, places the index fingers of both hands beneath the body of the lower jaw on each side, while the thumbs rest behind the angles. Gentle traction is then made upward upon the head, which is simultaneously extended backward as far as the patient can comfortably bear, thus putting the muscles of the neck on the stretch. An artificial anemia is thus set up in the vessels of the head and also in the smaller vessels of the nasal mucous membrane, causing the epistaxis to cease. The procedure should not be continued longer than from one to two minutes, or a partial or complete loss of consciousness may result. Ritschl (Münchener medizinische Wochenschrift, October 22, 1912).

FRACTURES OF FOREARM, TREATMENT OF.

In closed fractures of the forearm, the author observes, there is often shortening, owing to passing or overriding of the fragments. This can sometimes be overcome, but in other cases it recurs, notwithstanding proper manipulation. Within a period of some ten days, most of these cases can be cared for satisfactorily without operating, provided sufficient extension can be maintained.

For this purpose the author, as a preliminary measure, attaches to the hand, anteriorly and posteriorly, as separate straps, zinc oxide adhesive plasters 2½ inches in width, reaching from above the wrist to some 6 inches beyond the extended fingers. Below, these are allowed to come neatly into adhesive contact, and above the wrist and about the knuckles they are fixed by encircling strips; proceeding with and concluding the usual splint dressing, and with the forearm at a right angle, the author applies a plaster-of-Paris encasing bandage, including the hand—not tightly—and the lower arm. When this becomes firm, he includes beneath the enveloped forearm, by more turns of a plaster-of-Paris bandage, a light, flat wooden splint designed to project an inch or two beyond the extended fingers. This, having a cross-piece at the end, projecting an inch, affords means of extension when the double adhesive strap extending from the hand is drawn taut over the end and maintained beneath by desk tacks. The tension exerted should not be uncomfortable, but slack should be taken up several times, and the strap kept taut until the purpose of the dressing has been served. G. W. Miel (Denver Medical Times, January, 1913).

GASTRIC ULCER, TREATMENT OF.

At the beginning of medical treatment, the patient must be put to bed, and kept recumbent and as quiet as possible. All food and liquids by mouth must be forbidden for at least six days, if possible, and the bowels cleared by a daily enema. Rectal feeding during this time is worth while, nor is the predigestion of food necessary. The technique consists merely in elevation of the hips, the insertion for about six inches of a moderately stiff rubber tube, and allowing the food to pass very slowly into the bowels, for a period of about one-half

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hour. Rectal feedings should be given at about six-hour intervals, the bowel being thoroughly cleansed at least once a day. Ewald's directions cannot be improved upon: 40 Gm. of wheat flour are mixed with 150 c.c. of lukewarm water or milk, and 1 or 2 eggs with about 3 Gm. of table salt, and 50 to 100 c.c. of a 15 to 20 per cent. grape-sugar solution are added. The nutritive value of this mixture amounts to about 450 calories.

Even rectal feeding stimulates the formation of hydrochloric acid in the stomach, and, since the presence of hydrochloric acid retards the healing of ulcers, one is compelled to make an effort even during these first few days of treatment to retard its formation, neutralize what is formed, or where oral feeding is advisable engage it in digestive activity. This can be done with considerable certainty by the use of either silver nitrate, bismuth, or an acid neutralizer, preferably chalk. The silver nitrate should be given in ¼-grain pills or in solution. The nauseating effect may be relieved by the addition of a few drops of peppermint water, and the metallic taste by rinsing the mouth with weak salt solution. A highly recommended procedure, especially if vomiting is troublesome, is daily lavage with 1:1000 silver nitrate solution. However, the passage of the tube by those unskilled in its use is too dangerous to be generally advised.

Bismuth is used perhaps even more than silver nitrate. The carbonate is advised in preference to the subnitrate or subgallate. Large doses amounting to three or four hundred grains daily must be given. Constipation need not be feared; the effect may be quite the reverse.

Instead of the silver nitrate or bismuth, chalk may be used. It will for the time being sidetrack the stomach as a digestive organ. Along with the rectal feeding, 1 dram of prepared chalk should be given in a little water, and the dose repeated every half-hour till two more have been taken. J. Garnett Nelson (Virginia Medical Semi-Monthly, November 8, 1912).

HEMORRHOIDS, TREATMENT OF.

Discussing the local treatment, the author asserts that where there is not much inflammation, nor incarceration, nor abundant hemorrhage the best ointment is that of Lutz:—

℞ Cerati,
Olei amygdalæ expressi,
Zinci oxidi, of each, ʒiiss (10 Gm.).
Balsami Peruviani, gtt. iij.—M.

A piece of this the size of a hazelnut should be introduced as high as possible through the anus morning and evening, and especially before stool. Even in the presence of very painful fissures, this will give excellent results.

Where there is much hemorrhage, ointments containing extract of krameria, along with hyoscyamus, belladonna, and perhaps cocaine and extract of opium, may be used; or, the following, originally recommended by Unna, may be ordered:—

℞ Chrysarobini, gr. xij (0.8 Gm.).
Iodoformi, gr. v (0.3 Gm.).
Extracti belladonnæ fol., gr. x (0.6 Gm.).
Petrolati, ʒss (15 Gm.).—M.

This is very strong, and had best be used weaker, that is, with ʒj (30 Gm.) of petrolatum. Hot water or antipyrin in powder or 2 per cent. solution is equally effective and less irritating than the preceding.

Where there is intense itching, an alum and camphor ointment is advised by Gilbert:—

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℞ Aluminis, gr. xv (1 Gm.).
Camphoræ, gr. xij (0.75 Gm.).
Adipis benzoinati, ʒj (30 Gm.).—M.

If there be much moisture, however, powders are usually more effective than ointments. A 10 per cent. bismuth subsalicylate powder relieves itching well. If there is much congestion and irritation, zinc oxide may be added:—

℞ Bismuthi subsalicylatis,
Zinci oxidi, of each, gr. lxxv (5 Gm.).
Talci, ʒiij (90 Gm.).—M.

The various suppositories commonly employed in constipation, and even simple soap or glycerin suppositories, should be avoided in persons having a tendency to hemorrhoids.

In voluminous, readily prolapsing or bleeding hemorrhoids, an injection of olive oil should be taken every evening, to clear the lower bowel, before retiring. A moist, tepid compress will also greatly assist reduction. Lukewarm or somewhat warmer baths, persistently employed, afford the best means of reducing prolapsing and inflamed hemorrhoids. A. F. Plicque (Bulletin médical, June 1, 1912).

HERNIA AND OTHER BOWEL OBSTRUCTION, A THERAPEUTIC RESOURCE IN.

The use of hyoscyamine to facilitate the reduction of hernias has been employed with success by many practitioners. The preparation most satisfactory has been that known as amorphous hyoscyamine—the combined alkaloids of hyoscyamus—consisting of hyoscine with the pure crystallizable hyoscyamine, the former usually, but not always, in the predominating amount. The Pharmacopœia does not recognize, however, the combined or amorphous alkaloids.

The quantities and proportions of the two alkaloids vary in different specimens of the plant; it is therefore better to prepare a definite mixture of the two, which may be varied as occasion demands. The author suggests a mixture of 3 parts of hyoscine and 2 parts of atropine, the action of which can hardly be differentiated from that of hyoscyamine. The dose of the combination for male adults should be placed at $\frac{1}{100}$ grain. The variation in individual susceptibility to these alkaloids is very great. Thus, one of the author's patients was strongly affected by $\frac{1}{2500}$ grain of hyoscine, and another exhibited toxic symptoms after taking only $\frac{1}{1500}$ grain of atropine. The dose of $\frac{1}{100}$ grain should therefore be divided into ten, and 1 part administered every five to twenty minutes until the desired effect has been induced. The hernia may then be reduced with little, if any, difficulty or pain. If, however, it is an old affair and adhesions confine the sac in its place, it is idle to suppose that any drug can succeed, and operation is to be considered. About $\frac{1}{250}$ grain of strychnine may be given with advantage with each $\frac{1}{1000}$-grain dose of the combined atropine and hyoscine.

In fecal impactions and the various forms of intestinal obstruction in which paresis of the expulsive fibers and spasm of the circular muscles are frequent and important factors, as well as in torsion and obstipation, the use of this combination of drugs, pushed to full effect, is also useful. William Francis Waugh (Medical Record, November 2, 1912).

HYPERCHLORHYDRIA, ALKALIES AND.

It was noticed by the author that 10 per cent. of the patients with high gastric acidity receiving sodium bicarbonate gave a history of distress—belching, bloated feeling, sense of weakness, or

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obscure nervous symptoms—immediately after the ingestion of the drug, and in some cases severe flatulence where none had existed prior to treatment. Upon substituting magnesium oxide with a small quantity of bismuth subnitrate suspended in water for sodium bicarbonate, it was observed that the patients, a large percentage of whom had been constipated before, no longer required the Carlsbad salt previously prescribed for this condition. Diarrhea, in fact, appeared, the soluble magnesium chloride formed by interaction with the hydrochloric acid in the stomach performing the rôle of a cathartic.

These observations have led the writer to employ the following treatment in hyperchlorhydric cases: If the patient is constipated at the beginning of treatment, he prescribes a suspension of magnesia and bismuth, 1 teaspoonful or less after meals and again one and a half hours later; each dose represents 6 grains (0.4 Gm.) of magnesium hydroxide and 22 grains (1.5 Gm.) of bismuth subnitrate. This is continued for three to five days, and if the evacuations continue too frequent, at the expense of the patient's already reduced weight and strength, the foregoing is discontinued in favor of a powder containing *equal volumes* of magnesium oxide and magnesium carbonate, with a little powdered charcoal and sometimes bismuth.

Provided the clinician accurately estimates the degree of hyperchlorhydria from time to time, and prescribes always less magnesium oxide than the amount capable of neutralizing completely all the acid present, lessening the dose as the condition improves, and discontinuing it altogether when the free acid found at the height of digestion is within normal limits, the formation of concretions attributed by some to the prolonged use of magnesium oxide would seem to be impossible. The charcoal may not absorb much gas, but at least it imparts a gray coloration to the mixture,—a factor often of psychic benefit in these cases. P. C. Tupper (New York Medical Journal, January 25, 1913).

ILEOCOLITIS, DIETETIC TREATMENT OF.

The author discusses the diet to be prescribed for infants in cases characterized as follows: After twenty-four to forty-eight hours of fever, there comes a stage when the infant has eight to ten mucous, curdy, green and sometimes bloody stools a day; the weight continually decreases, though not showing the marked loss which accompanied the onset, and the temperature ranges between 99° and 101° F. In this condition, called by many a "putrefactive diarrhea," the diet to be chosen, according to the author, must be one which will not affect adversely the workings of a very much deranged internal metabolism, and which at the same time will form the least suitable medium for a bacterial infection of the colon. It is altogether likely, and is in agreement with the views of most writers, that the substance for such bacteria to grow in, which must of course be proteid in character, is the mucus secreted by the intestinal wall, and not the proteid of the food. Any irritating food must therefore be avoided, as, by causing an increased flow of mucus, it will favor bacterial pullulation.

The proteid of cows' milk is that food, in all instances, which is the least irritating to the intestine, and therefore advisable in these cases. It is best obtained by removing the whey from skimmed milk by means of coagulation with chymogen or pepsin. The curd is then broken up into fine particles by passing

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through a colander several times. To suspend the curd for administration to the infant, the author has found 5 per cent. gelatin water very useful. There are two objections to it, viz., there is a tendency to the subsequent formation of lumps, and the preparation solidifies on cooling, having therefore to be heated before use, with the possibility of coagulating the curd into a hard mass. But in spite of these objections, the author has found the solution to give very good results, after the initial barley-water period of twenty-four to forty-eight hours.

At the most, four or five days to a week is as long as the above wholly proteid food can be used. After this it is well to add a certain amount of buttermilk in place of the gelatin water, and gradually replace the skimmed-milk curds with whole-milk curds, gradually getting the child upon an albumin milk, and then turning to a whole-milk mixture. By this method of treatment, one can reduce very markedly the sugar content of the food. C. G. Grulee (Interstate Medical Journal, January, 1913).

INDICANURIA.

Analysis of 148 cases of indicanuria by the author showed no particular etiological factor common to all or even a considerable number of the patients. Nearly all of the more common forms of gastrointestinal diseases were represented.

Uncomplicated constipation does not seem to be instrumental in causing indicanuria. Obstipation resulting from obstruction of the transverse colon or above it can result in profound indicanuria, but this diminishes as the obstruction is lower down, and affections of the lower part of the gut are only exceptionally complicated by indicanuria.

Probably the most frequent cause of the putrefaction resulting in indicanuria is a combination of improper diet—most often excessive quantity—and a rundown condition, with loss of nerve tone.

The typical symptom-comp'ex of intoxication manifested by indicanuria consists of vertigo of varying degree, dull headache, languor, drowsiness, depression, lack of ambition, inability to concentrate the mind, insomnia or sleep that is not restful, easy fatigue, irritability, gas in the bowels, muscle pain and cramps in the legs, cold hands and feet, and fetid breath. In many there is a partial loss of co-ordination. None of these symptoms is constant, but nearly all the cases exhibit some of them. The one symptom comp'ained of with great regularity was gas formation in the bowel. Ninety-six patients were thus troubled. Early fatigue was mentioned among the most troublesome symptoms by 32. Sixty had headache in some degree or form. Fifty-five cases were troubled with dizziness. Insomnia was noted not infrequently. Often, though the patient could go to sleep without difficulty, there would be a feeling of exhaustion in the morning. Rare, but characteristic, was pain in the legs and perhaps muscles elsewhere. The skin was often pale and dry, and various skin eruptions were not uncommon. Nearly all of the series had an anemia more or less marked.

In the treatment it is necessary first to eliminate if possible the primary cause of the excessive putrefaction and to prescribe treatment for any disorder of the gastrointestinal canal. Measures directed toward the putrefaction and indicanuria itself consist of general hygiene, diet, exercise, irrigation, and occasional medication. Purgatives do

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not cause a diminution of the indican, but may even be followed by increased excretion. Irrigations are nearly always found necessary. Salt solution, soda, argyrol, and ichthyol all gave admirable results in the author's hands. Ichthyol solutions often seemed effective when others failed.

In the diet the proteid food was greatly reduced. Frequent changes in diet were tried, with the idea of producing unfavorable conditions for the growth of the putrefactive bacteria. No one point was found to be of more importance in the many cases where overwork was a factor than a restoration of nerve tone, as by a vacation spent in the mountains. Some of the patients had indicanuria which recurred with some degree of regularity in the spring, disappearing after a thorough rest. W. G. Morgan (American Journal of the Medical Sciences, December, 1912).

LOCAL ANESTHETICS, NEW.

Various alkaloids from plants allied to cinchona were tested by the author in comparison with quinine and cocaine, and a number were found to possess very great local anesthetic power. The procedure employed in estimating this power was to ascertain, by applying solutions to the eyes in rats and mice, the lowest percentage of solution which would cause local anesthesia lasting from thirty to ninety minutes. Quinine was found to produce this result in 3 per cent. solution; cocaine, in 2.5 per cent. solution; hydroquinine, 2 per cent.; ethylhydrocupreine, 1.3 per cent.; isopropylhydrocupreine, 0.1 per cent., and isoamylhydrocupreine, 0.08 per cent. The last-named alkaloid is thus no less than 32 times as strong a local anesthetic as cocaine, and is the most powerful substance of this class at present known.

Cupreine is an alkaloid occurring naturally in the so-called "false cinchona" tree, *Remijia pedunculata,* and is closely related to quinine, from which it differs in containing one less methyl group. The derivatives of cupreine referred to were prepared artificially.

Whereas cocaine proved injurious to the ocular tissues when the concentration applied was only slightly increased, quinine remained harmless until the concentration was 3 times that previously used for anesthesia. With isopropylhydrocupreine, moreover, the noxious concentration was 10 to 20 times greater than the anesthetic concentration. This property renders it possib'e by using high concentrations to secure anesthesia lasting several days, and will doubtless open to these agents a field in the treatment of neuralgic conditions. Morgenroth.

Another observer reports a clinical trial of the cupreine derivatives. The anesthesia appeared less rapidly than with cocaine, but lasted longer, postoperative pain being less marked. The hyperemia induced by these substances when they are employed alone is easily counteracted with epinephrin. As was to be expected in view of the low concentrations used, no toxic effects were noted. Unger (Berlin Medical Society; Semaine médicale, January 22, 1913).

MAGNESIUM SULPHATE, LOCAL ANESTHETIC ACTION OF.

This question was studied experimentally by the author. The method used was that previously employed by Moukhtar for other purposes, viz., injection of a solution of the local anesthetic agent to be tested into the skin adjoining the spinal column in guinea-pigs. The presence of any degree of local anesthesia is shown by the diminution or lack of

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response of the skin muscles when the overlying cutaneous area is touched,—normally a very easily elicited reflex in these animals.

It was found that, while magnesium sulphate solutions of 3 to 5 per cent. strength generally produced only an hypoesthesia, those of 7 to 12 per cent. strength induced a well-marked anesthesia, rarely exceeding eight minutes in duration. Fifteen to 25 per cent. solutions caused a complete local anesthesia lasting about one-half hour, after which local sensibility very gradually returned. A saturated solution containing 0.62 Gm. of the salt in each cubic centimeter produced complete anesthesia the duration of which generally exceeded one hour.

In order to prove the fact that the effects witnessed were not dependent upon the osmotic tension of the solutions used, comparative tests were made with solutions of magnesium sulphate, sodium sulphate, and sodium chloride, shown to be isotonic by cryoscopy. It was found that, whereas solutions of the last two salts approximately isotonic with the body-fluids had no anesthetic power, magnesium sulphate solutions of the same molecular concentration (about 7 per cent.) produced a distinct local anesthesia. With stronger solutions the freezing-point of which was below — 2°, sodium sulphate and chloride did induce anesthesia, but this was always of much shorter duration, and usually less complete, than that caused by magnesium sulphate. A solution of magnesium *chloride* of 5 per cent. strength was found to produce an anesthesia of short duration; 7 to 10 per cent. solutions produced insensibility lasting somewhat over half an hour. B. Wiki (Archives internationales de pharmacodynamie et de thérapie, vol. xxi, Nos. 5-6, 1912).

NEPHRITIS IN CHILDREN, PROCTOCLYSIS IN ACUTE.

From results obtained in the treatment of 2 cases of nephritis, 2 of typhoid fever, 3 of scarlatina, and 1 of intestinal intoxication, the author is led to state that sodium chloride does not increase the water retention in nephritis. It prevents the toxic agent present from causing the gelatinous colloid substance of the kidney to absorb water and go into solution (this being the source of the albumin in nephritis). The amount of albumin is continuously decreased and finally disappears as the strength of the chloride is increased. All the other symptoms of acute nephritis, the edema, the urinary findings, and the subjective features, can be made to disappear or are prevented by a combination of alkalies and sodium chloride. Acute nephritis is benefited by the administration of large amounts of water.

A convenient way of administering sodium chloride is by proctoclysis; in an emergency it may be given by hypodermoclysis or by intravenous injection. The large amount of water absorbed helps to reduce the kidney acidosis. Edema is no contraindication to the measure. Used sufficiently early, the measure would appear to prevent its occurrence, and if edema is present it assists in causing its disappearance.

The apparatus employed by the author consists simply of a graduated glass container holding 2 pints and supported in a wooden box containing 3 or more hot-water bottles, the purpose of which is to keep the salt solution at about 110° F. From the container runs rubber tubing which terminates in a glass delivery tube for insertion into the rectum or is connected by means of a piece of straight glass tubing to a soft-rubber catheter about No. 14 to 16 French. This is in-

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serted into the bowel for about six to eight inches after a cleansing enema and after the flow of fluid has been regulated. The rubber tubing connected with the delivery nozzle or catheter should be sufficiently long so that it will not interfere with the motion of the child about the bed.

The author also recommends that in the acute infectious diseases and toxemic states, as well as before and after ether anesthesia, the patient be placed upon continuous or intermittent saline proctoclysis, as the urgency of the case may require, together with alkalies, with the object of preventing the occurrence of nephritis. H. Lowenburg (Pennsylvania Medical Journal, December, 1912).

NEVI, RADIUM IN TREATMENT OF.

Complete eradication of vascular nevi, without any scarring whatever, is claimed for radium by the author. He advises that the skin be first broken over the lesion, even if it be only by the lightest application of electrolysis, as this permits of a more rapid action of the radium salt, and its use in relatively small dosage. Since the vascularization in these blemishes varies, and is not the same in different portions of the same lesion, he applies radium varnishes or radium salts in tubes corresponding in strength with the redness of the regions treated. Burns and scars otherwise possible are thus avoided. Foveau de Courmelles (Journal d'hygiène, September 25, 1912).

NEWBORN, USE OF MUCUS EXTRACTOR IN ASPHYXIA OF.

Even when they breathe, newborn infants are often partially choked up, and remain bluish, with stertorous breathing, sometimes for a few hours,—sometimes for days,—before they finally clear themselves. Sometimes, again, they do not succeed in getting rid of the mucus, and then, after a longer or shorter illness, they die of the strain due to partial suffocation, pneumonia, etc.

At the London Hospitals, in 75 per cent. of all full-time newborn infants dying within forty-eight hours of birth, the trachea has been found *post mortem* to be wholly or partly blocked with mucus. As the best means of overcoming this danger, the author advises the employment of a simple but effective extractor, made of glass and rubber, already in use at the Coombe Hospital, Dublin. As an improvement to the instrument he recommends that a rubber bulb be attached to it to supply the negative pressure required for suction. The bulb being deflated, and the eye of the extractor being placed over or near the vocal cords, mucus would then be sucked up by the expanding bulb, the process being repeated as often as is necessary. The author is confident that, were the use of instruments of this kind to become general, many lives would be saved. H. B. Oxenham (Australasian Medical Gazette, November 23, 1912).

ORGANIC IODINE PREPARATIONS, VALUE OF.

Up to the present it has not been shown, according to the author, that the organic iodine preparations, with the exception of preparations of thyroid, have any specific action in pathological conditions, except the action of iodine after separation from the molecule. The iodized proteins seem to be of advantage for therapeutic use only in so far as they avoid gastric irritation. The more stable compounds are apparently not well utilized, while the less stable compounds have no advantages over the alkaline

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iodides, either as to local effects or as to rapidity of absorption and excretion.

The iodized fats and fatty acids seem to have some advantages when the continuous action of small amounts of iodine is desired. They are more slowly and evenly split and the amount of available iodine in the blood does not vary from time to time to the extent that it does when the alkaline iodides are administered. The use of the iodized fats in such conditions as arteriosclerosis, bronchial asthma, lead poisoning, etc., probably has some rational basis, therefore, on physiological grounds. These substances are also as a rule non-irritant to the stomach. The difference in frequency of iodism is probably due to the difference in the amount of available iodine present in the body at any one time. When large amounts of iodine are desired, as in cerebrospinal syphilis, avoiding the danger of iodism would be at the sacrifice of therapeutic efficiency.

The use of organic iodine preparations with toxic side actions, due to the molecule or the products of its splitting, should be discouraged. The products of iodine with the higher fats and fatty acids, however, are generally free from toxic actions. F. C. McLean (Archives of Internal Medicine, November, 1912).

PALMAR FASCIA, CONTRACTION OF, AND THYROID TREATMENT.

The author refers to 5 cases of Léopold-Lévi in which the continued administration of 0.1 Gm. (1½ grains) doses of thyroid powder brought about marked benefit in Dupuytren's contraction, the fibrous tissue becoming greatly softened and the functions of the involved fingers in large measure returning. In two other very marked cases the results were negative. Léopold-Lévi avers that in view of the prompt and continuous action of the remedy in the cases in which it proved useful, as well as the other symptoms of faulty thyroid function present in these patients and relieved by the treatment,—subacute rheumatic attacks, pain, headache, alopecia, rigidity of the neck, joint creakings, cyanosis, and edema,—the palmar fascial contraction in these cases had been of thyroid origin. Gilbert (Bulletin de l'Académie de Médecine, January 14, 1913).

PEDICULI CAPITIS, RAPID EXTERMINATION OF.

Although pediculosis capitis is extremely common, it is not generally known that the parasites can be exterminated with very little trouble in a short time. The method described by the author was referred to by him six years ago, but appears to have escaped attention. The patient is laid on her back on the bed with the head over the edge, and beneath the head is placed a basin on a chair so that the hair lies in the basin. A solution of 1:40 phenol is then poured over the hair into the basin and sluiced backward and forward until the whole of the hair is thoroughly soaked with it. It is especially necessary that care should be taken to secure thorough saturation of the hair over the ears and at the nape of the neck, since these parts are not only the sites of predilection of the parasites, but they are apt to escape the solution. This sluicing is to be carried out ten minutes by the clock. The hair is then lifted from the basin and allowed to drain, but is not dried or even very thoroughly wrung out. The whole head is then swathed with a thick towel, or better a large piece of common house flannel, which is fastened up to form a sort of turban, and the head is allowed to remain like this for an hour. It can then be either washed or

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simply allowed to dry, as the phenol, being volatile, quickly disperses. At the end of this period every pediculus and, what is more important, every ovum is dead. Incidentally any impetiginous scabs are softened, so that they come away easily and allow any ointment which is used for the cure of this complication to be applied readily.

The writer has never seen carboluria result from the method, though he would not advise it in very young children, as it would be simple to snip off all the hair and might be risky to use the phenol; but with children of 5 years and over it is certainly safe. The hair itself is not damaged, but appears particularly soft and silky afterward. Arthur Whitfield (Lancet, December 14, 1912).

PELLAGRA, GELSEMIUM IN.

The author was led to use gelsemium in endeavoring to relieve a pellagrous patient who complained constantly of severe pain in the feet. The dose used was 3 or 4 drops of the fluidextract given every four hours. All other agents were discontinued, and the pain in the feet soon ceased; the strength increased; the appetite returned and the weight increased forty pounds, the patient apparently regaining her normal state of health. Much improvement was noted in 4 other cases. If drooping of the eyelids or diplopia occurs, the drug is withheld and no further unpleasant effects are observed. Roy Blosser (Atlanta Journal-Record of Medicine, November, 1912).

PERTUSSIS, VACCINE TREATMENT OF.

The results obtained by the use of pertussis vaccine in a series of 17 cases of whooping-cough are reported by the author. The cases ranged in age from 5 months to 8 years, and were for the most part in poor, ill-nourished and badly developed children.

The dosage which the author has found best is forty million bacteria. This he gives even to an infant, twice a week, or in severe cases in old children, three times a week for one week only. If much benefit is noted, the intervals are prolonged and *vice versâ*. The buttocks were chosen as the site for injection, as the little patients cannot then see the syringe if properly held and the area appears to be less sensitive than other portions of the body.

Many of the cases improved after a single dose. An infant of 5 months was cured, others were improved, after the second, third, or fourth dose. In the few cases, numbering 3, in which the disease was not "cured," the symptoms were distinctly mollified, the number of attacks and their severity becoming less, cyanosis being less marked, and vomiting during the paroxysms no longer taking place; the children slept better. In none of the cases was there any reaction, local or general, from the vaccine.

The vaccine should be used only in undoubted cases of whooping-cough. The attendant should not be relied on as to the presence of a "whoop," but the lungs, larynx, pharynx, and epipharynx of the patient thoroughly examined by the physician before the treatment. The largest doses of vaccine should be given in the early stages of the disease. Infants require smaller doses, a less number of doses, and longer intervals between doses than do older children. The younger the infant, however, the more rapid has been the cure in the author's experience. The writer advises the physician to have 6 vaccine vials of twenty million each constantly in his possession, for in families in which whooping-cough develops a prophylactic dose of forty million, given

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once or twice, may ward off trouble for the other members. G. D. Scott (New York Medical Journal, January 25, 1913).

PNEUMONIA, TREATMENT OF LOBAR.

A dietetic indication deserving special mention in pneumonia is found in the increased demand for calcium which there is reason to believe exists in this disease. The element calcium, in a small but definite amount, is regularly required by all the fluids and tissues of the body to maintain their healthy condition. The muscle of the heart, in particular, must have its regular ration of calcium, and the leucocytes, unless supplied with this element, fail to engulf adequately the bacteria. The calcium starvation which seems to obtain in pneumonia is obviously due to the withdrawal of calcium for the purpose of coagulating fibrin in the consolidated lung, of meeting the extra demand due to the pronounced leucocytosis, and of supplying the invading pneumococci themselves, which seize calcium for their own use. Unless the calcium deficiency is corrected by the addition of a sufficient amount of that element to the diet, the pneumonia patient may be handicapped in his struggle with the disease.

To make good this deficiency the author gives calcium chloride or lactate (the former by preference) in 10-grain (0.6 Gm.) doses every four hours, from the time of first recognition of the disease until three days after defervescence. That patients who are given calcium in the doses mentioned do better than those who are not is a strong clinical impression which observation of a considerable number of cases has made on the author. E. E. Cornwall (Medical Times, January, 1913).

PREGNANCY AND TUBERCULOSIS.

Emphasizing the necessity for the ingestion of as much food as the patient can bear in cases of tuberculosis with pregnancy where it is decided not to empty the uterus, the author states that, if the patient is not prejudiced against wine, manzanilla, a light, bitter sherry, which must be imported already bottled from Spain, will cause, he has found, a very marked increase in the patient's appetite. He prescribes a combination of lysol, 1 part; ichthyol, 10 parts, and glycerin, 20 parts, with the wine in addition. This will generally cause the patient to gain 20 ounces a week. The best mode of administration is to begin with 1 drop of the lysol-ichthyol mixture, and increase by 1 drop at each dose until 30 drops are attained, when the amount is kept at this figure. The preparation is dropped into a half-tumblerful of water and taken just before meals. By virtue of the resulting superalimentation, the author believes that the danger of fatality from pregnancy in these cases can be reduced to about 60 per cent. Still safer, however, is to empty the uterus promptly. D. H. Stewart (Medical Record, November 16, 1912).

PSORIASIS, TREATMENT OF.

Attention is drawn by the author to potassium permanganate baths, which seem to him to act admirably, especially in acute universal psoriasis. Two tablespoonfuls of a saturated solution of potassium permanganate are added to a warm bath. After soaking in this for about ten or fifteen minutes the patient thoroughly dries himself and applies Boeck's paste, to which is added 10 per cent. of liquor picis carbonis:—

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℞ Amyli,
Talci, of each, 40 parts.
Glycerini, 20 parts.
Acaciæ, 1 part.
Liq. plumbi subacetatis, 4 parts.
Liq. picis carbonis, 26.5 parts.
Aquæ, 200 parts.
M. Sig.: Use as a lotion.

Tar baths are also excellent, and may be conveniently prepared by adding 1 or 2 glasses (8 or 16 ounces) of an emulsion of coal tar to a warm bath. When tar is used, however, it is often better to incorporate it in a salve and rub it in after a bath. Various salts are often recommended as additions to baths given for psoriasis, but it should not be forgotten that water itself acts most profoundly on the skin, and that much of its action is due to osmosis. The more hypotonic the bath is, the more osmotic it will be and the more actively it will affect animal cells with which it comes in contact. Pure water brought into contact with animal cells powerfully induces them to give up their products of retrograde metabolism, and this may also have its effect in a disease like psoriasis, which, there are many reasons to believe, is due to some metabolic error.

Maceration by enveloping the part in an impermeable dressing, retaining the sweat and heat of the skin, and so making this function of the skin react on itself, is an old and powerful remedy. The principle may be employed to intensify the action of other topical agents. An excellent result was obtained in a pair of obstinate old patches by applying Dreuw's paste

℞ Acidi salicylici, 10 parts.
Chrysarobini,
Olei rusci, of each, 20 parts.
Saponis viridis,
Adipis lanæ hydrosi, of each, 25 parts.

and covering it with oiled silk fixed in place with adhesive plaster. Often the part may be enveloped in cloths wet with Hutchinson's lotion (1 part of lead subacetate solution to 5 of liquor picis carbonis), diluted a dram to a pint and then covered with oil-silk, and bandaged in place. This dressing may be allowed to remain all night.

There are a number of other substances that when painted on the skin dry down into an impermeable coating, such as gutta percha dissolved in chloroform, flexible collodion, and the zinc oxide glycerin jellies. Adhesive and other plasters may also be used for the same purpose. Douglass W. Montgomery (Journal of the American Medical Association, October 26, 1912).

SINUS SUPPURATION, TREATMENT OF ACUTE.

Acute infections of the nasal accessory sinuses are generally known as grippe, cold in the head, and neuralgia. They are usually ushered in suddenly with extremely severe pain, some rise in temperature, deep pain in the eye on the side affected, some swelling of the lids, and photophobia and lachrymation. The mental disturbance may be sufficient to produce delirium. The pain, at first constant, usually soon resolves itself into daily or bidaily exacerbations, which return at very regular hours. The discharge of pus is not proportionate to the symptoms. Many of these cases are bedside cases and it is impossible and also unnecessary to diagnose which particular cavity or group of cells is affected, as the same treatment is indicated in all.

The treatment, in brief, is contraction of the middle turbinate. Cocaine is the only drug that should be used for this purpose. Epinephrin produces such secondary exudation, irritation, and swelling that its use is contraindicated. The cocaine is best applied in a 4 per

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cent. solution on a cotton applicator, which is passed between the end of the middle turbinate and the nasal wall. If the patient is so situated that this cannot be done by the surgeon personally a fine spray of 2 per cent. cocaine may be given to the nurse, with instructions to use very sparingly. These prescriptions should always be marked "non repet." so that there may be no danger of the habit. After the parts are contracted a cleansing alkaline water solution should be used, preferably a modified Dobell solution. This may be followed by an oily spray containing menthol. Hot, moist applications over the whole face seem to reduce the pain and promote drainage. Aspirin, the salicylates, acetphenetidin, quinine, and salol may be used as indicated, and free catharsis will lessen the local congestion and pain.

The author does not find it necessary in the acute cases to attempt any irrigation of the frontal or maxillary sinuses unless there is trouble in the maxillary antrum which can be traced to a carious tooth. The vacuum treatment by negative air-pressure gives a great deal of relief in many instances, though it has not as great a value as in subacute or chronic cases. H. B. Lemere (Western Medical Review, September, 1912).

SYPHILIS, ADMINISTRATION OF SALVARSAN IN.

The efficiency of salvarsan bears a direct relation to the age of the infection. In the early stage 3 or 4 doses supplemented by mercury will in many cases cure the disease in from six months to a year. In the florid stage 5 or 6 doses followed by several mercurial courses are necessary.

In some forms of syphilis of the nervous system the effects of salvarsan are more satisfactory than those of mercury and potassium iodide. Thus, it is indicated in tabes with a very positive serum reaction and a lymphocytosis of the cerebrospinal fluid; it should be given in repeated small doses at proper intervals. The most marked improvement is seen in cases of cerebrospinal syphilis which simulate tabes.

Intense headaches, often so persistent during the secondary and tertiary stage of the disease and due to a low-grade meningitis, usually remit with remarkable rapidity under salvarsan. The drug has been criticised owing to the relapses which have occurred and which were attributed to a toxic action and a special affinity for nervous tissues. That this view was not justifiable is shown by the experience of the past year, for since the adoption of more intensive treatment such reports have become comparatively rare. These complications were true relapses.

In malignant syphilis, when mercury has been given over a long period continuously without changing the clinical manifestations or the blood reaction, not infrequently all of the manifestations disappear after 1 or 2 doses of the drug. These patients probably develop more or less immunity to mercury, or their strains of spirochetæ are more amenable to arsenic treatment.

A reaction uninfluenced by a long course of mercury may be changed by 1 or 2 injections of salvarsan. In other words, a combination of salvarsan and mercury is more efficient in changing the blood reaction than either alone. In the primary stage it is possible permanently to reverse the blood reaction with salvarsan, but, as the disease grows older, the probabilities of changing it with only a few doses grow less. The introduction into the system of such large quantities of the drug as is possible with neosal-

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varsan may so concentrate the treatment that all or most of the organisms are destroyed, but it has not yet been used long enough to permit of drawing definite conclusions.

In controlling the treatment by the Wassermann reaction it must be borne in mind that from 10 to 15 per cent. of the active late manifestations of syphilis give a negative reaction, so that, in the face of positive clinical findings and a negative test, the latter may be disregarded in the late stages of the disease. The author has on several occasions administered salvarsan to patients with a negative Wassermann with the very best results. In 1 case with a marked onychia involving the nails of the hands and feet, a decided change took place after the second injection. John A. Fordyce (Journal of the American Medical Association, October 5, 1912).

TALIPES EQUINOVARUS AT BIRTH, CURE OF.

Immediately after the birth of the infant, if this deformity of the foot is present, the author has prepared a number of strips of zinc oxide adhesive plaster 1 inch wide and 8 to 10 inches long. The deformity is overcorrected, and a strip of the adhesive plaster placed over the sole and inner aspect of the foot and drawn tightly along the outer aspect of the leg in a line with the outer malleolus to hold the foot in this overcorrected position. A second strip is placed over the sole just posterior to the base of the metatarsal bones, extending over the inner aspect of the foot and ending over the joint of the great toe. This strip, which is drawn firmly and applied to the leg on the outer side, 1 to 2½ inches above the external malleolus, and wrapped around the leg in an ascending spiral, causes dorsal flexion, everts the foot, and puts tension on the tendo Achillis.

Strips of adhesive plaster are now placed to cover in these two tension strips, beginning on the leg 2 inches above the ankle-joint and overlapping each other from above downward, until the instep is reached; here they should be drawn sufficiently tight to increase further the tension on the second strip applied until it is almost or quite drawn down upon the instep, and continued down to the base of the toes. Before it quite reaches the toes, a small fold of gauze should be placed on the sole of the foot in this region to prevent the cutting of the last few strips, which will happen if the gauze is not used. The overlapping of the adhesive plaster should consist of three or four layers applied successively, so that a firm support to the foot is maintained.

This overlapping of the two primary strips further increases the dorsal flexion of the foot, puts more tension on the tendo Achillis as well as an increased eversion and tension on the inner plane of the plantar fascia. The primary dressing is allowed to remain for ten days or two weeks, when it is removed, the foot thoroughly cleansed with ether, bathed in alcohol, and a fresh dressing applied.

If this dressing is used immediately after birth, six or eight weeks' treatment will be sufficient to correct the deformity. Then the foot can be safely left alone with a stiff-ankle infant-shoe, with one strip of adhesive plaster on the outer side of the foot and leg to aid in maintaining the correction.

In those cases where the deformity is not seen for several days or a couple of weeks after birth, the treatment will have to be carried out over a longer

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period of time. A. R. Allen (American Journal of Obstetrics, October, 1912).

THEOBROMINE SODIUM SALICYLATE IN BRONCHIAL ASTHMA.

It is pointed out by the authors that in many cases of asthma, not alone of those of cardiac origin, but also those of the bronchial type, the administration of theobromine sodium salicylate (diuretin) gives good results. This was first pointed out by Van den Velden, but is not yet generally known. Often it is sufficient to give 15 to 30 grains (1 to 2 Gm.) of the drug before the time when a paroxysm is expected, *i.e.*, as a rule in the evening. An advantage of the product is that it can be taken for weeks without harmful effects.

In the purely nervous forms of asthma the effect of the drug is inconstant. It is more certain in the bronchitic type of case, especially if heart weakness is simultaneously present. That the antidyspneic effect of diuretin has taken so long to become recognized is due partly to the name given it, which indicates only one of its uses, and partly to the fact that the dose employed has been too small. Meyer and Cahn (Deutsche medizinische Wochenschrift, September 19, 1912).

TUBERCULOSIS, ORGANOTHERAPY IN.

As Hallion has remarked, the administration of preparations of organs is useful not only to replace substances lacking in the system, but also to stimulate the corresponding organs to increased activity, to relieve symptoms themselves, and even to regulate the function of various organs, reducing their action when it is excessive. Thus understood, organotherapy has a far larger field than when substitution alone is its aim, and affords effectual help in a number of diseases in which it had long remained unutilized. Among these affections is tuberculosis.

Thyroid Substance.—This is indicated only in sluggish cases, *e.g.*, in chronic articular tuberculosis, especially if evidences of thyroid inactivity are present. The dose should be small—⅙ to ½ grain (0.01 to 0.03 Gm.) of thyroid substance *pro die*—and the patient kept under watch for tachycardia. In tuberculous patients readily developing fever and with the usual tendency to tachycardia, thyroid preparations should only exceptionally be used.

Hepatic Substance.—Gilbert asserts that 4 to 8 capsules, each containing 4 grains (0.25 Gm.) of liver substance, *pro die* are effective in arresting or preventing the return of hemoptysis. The author has often been able to confirm this assertion. Triboulet and the author have seen good results in some alcoholic tuberculous patients with hepatic enlargement. Lemoine and Gérard report having seen benefit in the first and second stages of tuberculosis from intratracheal or subcutaneous injections, or oral administration, of an extract of bile prepared with petroleum ether.

Adrenal Therapy.—In cases of tuberculosis with low arterial tension and asthenia the administration of epinephrin, 5 to 10 drops of the 1:1000 solution daily for five to ten days, followed by a like period of rest, or of adrenal substance, 1½ to 5 grains (0.1 to 0.3 Gm.) daily, is formally indicated. If there is a tendency to hemoptysis, however, or if the blood-pressure is too much increased, the measure is to be discarded.

Pituitary Substance.—The extract of the whole gland in doses of 1½ to 3 grains (0.1 to 0.2 Gm.) daily, according to the author's experience, tends distinctly to raise the blood-pressure. It

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also seems to lower the cardiac rate, improve the appetite, promote sleep, and at times benefit the general condition. Such medication, however, in no wise specifically acts on the tuberculous state.

Muscle Substance.—The administration of raw meat or meat juices to the tuberculous, as advised by Richet and Héricourt, is inconstant in its effects, to say the least. It should, however, still be accorded a place in the diet of these patients, more as a stimulating nutrient than for any specific effect.

Splenic Substance.—Bayle recently claimed that he had secured good results by administering 100 Gm. (3½ ounces) of fresh hog spleen every day. Splenic "extracts" may be substituted. No definite pronouncement can as yet be made as to the value of this method, nor concerning the still more recent recommendation of giving splenic substance in combination with hepatic and small amounts of thyroid preparations.

Pancreatic Substance.—Loeper and Esmonet advise the administration of large amounts of pancreatin—2, 3, and even 4 Gm. (ʒss-j)—in keratin-coated capsules of 0.25 Gm. (4 grains) each, daily. While in patients with lung cavities the results were bad, first- and second-stage cases and especially patients with involvement of the serous membranes showed a return of appetite, a considerable gain in weight, and a markedly improved general condition. The author has frequently seen pancreatic preparations improve the digestive functions in the tuberculous.

In brief, it may be stated that, while these organic preparations often do not possess directly antituberculous properties, they serve to make up for insufficiency of the various organs coming under the baneful influence of the tuberculous infection, reinforcing their action and assisting the organism in its fight against the disease. Pierre Lereboullet (Paris médical, November 16, 1912).

TUBERCULOSIS, USE OF CREOSOTE IN.

Chronic, sluggish, afebrile cases of tuberculosis, especially those characterized by profuse expectoration, are often greatly benefited by creosote, intelligently administered. There is often a striking improvement in the digestive functions. Fermentation in the stomach and intestines is diminished, and the bowels may be urged to act without cathartics. Many cases of dyspepsia in the tuberculous are cured by the administration of creosote. An increase in weight is not slow in appearing, which has an excellent effect on the psychic state of the patient.

Another sign of tolerance of creosote is a diminution in the amount of expectoration. Purulent sputum with a disagreeable odor often disappears and is replaced by odorless mucous material. The cough is greatly ameliorated, and the non-tuberculous bronchitis, tracheitis, and laryngitis frequently met with among consumptives are cured.

In fibroid phthisis, characterized by profuse expectoration of pus, creosote is often the best remedy. Cavities often dry up, at least temporarily. Large doses are not at all necessary; 3 to 5 drops (0.18 to 0.3 c.c.) three times a day, given over a prolonged period, produce good and frequently lasting results. A good product must, of course, be obtained. The author has lately used creosote carbonate almost exclusively and is under the impression that it is more easily tolerated than creosote. It can be given in doses of from 15 to 25 drops (0.9 to 1.5 c.c.) per day. Maurice Fishberg (American Practitioner, September, 1912).

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TYPHOID APPENDICITIS.

From clinical studies and a review of the literature the author is convinced that there may occur a localization of the typhoid infection in the appendix, and that for such a condition the term "typhoid appendicitis" is a proper designation. The diagnosis of this unusual morbid combination rests upon the symptomatology of appendicitis proper and upon the concomitant symptoms of typhoid, as well as the Widal test. Not every appendicular syndrome appearing at the onset or later in the course of typhoid fever represents a bona-fide appendicitis, however, and hence it is necessary in practice to make a distinction between true and false typhoid appendicitis. The appearance of typhoid appendicitis does not justify immediate operative intervention, both because the condition may be simulated without being actually present and because the condition may evolve favorably and terminate in perfect resolution, as is the case with typhoid localized in the ileum. If, however, the symptoms pointing to appendicular trouble are so marked from the outset as to lead to a suspicion of ulceration of this structure, or, again, if the symptoms, mild at first, subsequently become so serious as to cause apprehension concerning the patient's life, intervention is formally indicated. F. Fazio (Giornale Internazionale delle Scienze Mediche, December 15, 1912).

TYPHOID FEVER, MILK-FREE TREATMENT OF.

The authors report a series of 65 cases of typhoid fever treated entirely without milk, except in the stage of convalescence, and in which the results obtained, especially the lack of serious complications, seemed to demonstrate the value of the diet and other measures prescribed. Four patients died, and in these a fatal ending had been considered inevitable from the date of admission. Persistent diarrhea was recorded in only 4 cases, distention in 10 (marked only in 3), hemorrhage in only 4, and perforation in none.

The diet consisted of broths, soups, gruels, gelatin, eggs, sugar of milk, and butter. Great reliance was placed on gelatin, which was given almost *ad libitum* in a 5 per cent. solution, flavored with lemon, vanilla, orange, or sherry and sweetened with sugar of milk. Gelatin apparently was accountable for the low incidence of hemorrhage in the series. If venous thrombosis occurs, the authors admonish, gelatin should be stopped.

The gruels (barley, rice, and oatmeal) may be made of different consistence. It is well to begin with a thin gruel, 1 tablespoonful to 1 pint of water, boiled for three-quarters of an hour, and gradually thicken if it is well borne, using then 2 tablespoonfuls of the barley flour, rice, or oatmeal. All should be strained. For adults, the yolks of 4 eggs and 4 drams (16 Gm.) of milk-sugar should be added to the gruels; for children, one-half these amounts. A pat of butter may also be added.

The diet was arranged as follows: 6 A.M., barley gruel, 1 dram milk-sugar, and yolk of 1 egg, total 10 ounces; 9 A.M., lamb broth, 10 ounces; 12 M., rice gruel, milk-sugar, and yolk of 1 egg; 3 P.M., barley gruel, etc.; 6 P.M., rice gruel, etc.; 9 P.M., pea soup, 10 ounces. At 8 and 11 A.M., and at 2, 5, and 8 P.M., 6 ounces of the flavored gelatin were given.

During convalescence the gruels were thickened until the tenth day, then 2 soft-boiled eggs allowed, and if no rise in temperature occurred milk toast also permitted on the next day. Gradually

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soft diet was allowed, and at the end of the week, if convalescence was maintained, meat and vegetables given.

Cold water was given *ad libitum,* and after each feeding 5 to 10 drops of dilute hydrochloric acid administered in the water.

The routine treatment consisted of cold sponging, lasting from fifteen to thirty minutes, and given every three hours if the temperature was 102.5° F. or over by the axilla. The water used was at 85° at first, and later reduced to 75°, 65°, and lower, even to ice water in adults if it was well borne. Hexamethylenamine was given in doses of 5 grains (0.3 Gm.) four times daily—to children, 2 or 3 grains (0.12 or 0.2 Gm.)—and seemed to exert a marked influence in reducing the toxemia. The other drug used, as febrifuge and antitoxic, was acetylsalicylphenetidin, which was given in doses of 5 grains every two hours to adults, and 2 to 3 grains to children. It did not in a single case cause the slightest depression.

In hemorrhage no food was allowed except gelatin; opium and lead were given internally and ice applied to the abdomen. In distention, the same dietary restriction was made, and oil of turpentine given in doses of 2 to 5 drops in emulsion; the rectal tube was passed and saline enteroclysis administered three or four times a day, two hours being allowed for 1 quart and one hour for 1 pint. For nephritis, an abundance of water and potassium citrate were given. For diarrhea, the diet was limited to gelatin or this was given with very thin gruels; bismuth, opium, and lead were used. Constipation was treated with enemas, simple or high compound, consisting of magnesium sulphate, 1 ounce (30 Gm.); glycerin, 2 ounces (60 c.c.); turpentine, 2 drams (8 c.c.), and water, 1 pint; irrigation of the bowels was also practised. W. N. Johnson and C. C. Watt, Jr. (New York Medical Journal, February 1, 1913).

ZINC OXIDE, USES OF A PASTE OF.

Oxide of zinc may be advantageously used as a paste, which easily dries and sticks sufficiently to afford good protection to any small wound or puncture, such as is made in giving hypodermic injections, diphtheria antitoxin, etc. The paste is made by simply adding a few drops of an aqueous solution of, *e.g.,* bichloride of mercury and ammonium chloride solution (1 to 2000 strength) to a small quantity of zinc oxide. The paste is especially applicable to slight wounds and abrasions about the face when a bandage is objectionable to the patient. In cases of sores about the face, especially in impetigo contagiosa, the writer removes all the crusts and washes the raw surfaces with bichloride solution, then makes the paste fresh and applies it well to the irritated places twice a day. The healing is usually rapid and satisfactory, and the glandular swellings often found in cases treated with ointments, sulphur, etc., do not appear. When there is much stinging and itching about skin abrasions the paste can be made more acceptable and soothing by substituting a 2 per cent. solution of phenol for the bichloride of mercury solution. The paste is very helpful in the treatment of indolent ulcers. H. J. Hiden (Medical Summary, February, 1913).

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Clinical Summary

Practical hints from articles and abstracts that have appeared in the Monthly Cyclopedia and Medical Bulletin during the current year.

Albuminuria. TREATMENT. Prophylactic doses of Roux's antidiphtheritic serum in 128 cases of scarlet fever found to lower greatly frequency of albuminuria in these cases. Anaphylactic effects extremely rare with this serum. In all cases of albuminuria originating from throat inflammation, as well as in albuminuria in general where other measures have proven ineffective, the serum should be given hypodermically in doses of 10 c.c. (2½ drams) every three or four days. *Galliot.* Page 36

Anal Fissure. TREATMENT. Conservative measures advocated in painful fissure. In examining for it have patient bear down, or blow in some orthoform. In treatment: 1. Apply thigenol on cotton on end of probe, which is then withdrawn, leaving cotton in position. 2. Patient to drink tumblerful of hot water an hour before breakfast, and another, either hot or cold, in evening. 3. To insure softness of motions: Tincture of cochineal and peppermint oil, of each, ♏x (0.6 c.c.); syrup of glycerin, ʒj (4 c.c.); soft paraffin, ʒj (31 Gm.). If this objectionable, add 20 grains (1.3 Gm.) of powdered cocoa, or 10 to 20 grains of powdered agar. Dose of the mixture, 1 teaspoonful 4 times daily. 4. Where constipation previously present: Some aperient, such as confection of senna, ʒss-j (2-4 c.c.), to be given in addition. 5. After bowels act: Patient to wash parts and apply some bland ointment, *e.g.*, one of eucalyptus. 6. Where violent sphincteric spasm and pain, dilate under gas, and, if sentinel pile present, remove with forceps. *Baldwin.* 109

Anemia. TREATMENT. Administration of olive oil and glycerin, equal parts, in gradually increasing doses two hours after each meal considered a valuable measure. *Bram.* 47

Appendicitis, Acute. TREATMENT. After operation in children: 1. Give warm saline solution by rectum, 8 to 10 ounces every two or four hours; administer slowly with catheter and funnel. 2. Feed with a decoction of crushed raisins, alternated with albumin water. 3. Open bowels as soon as possible. If no normal movement within twenty-four hours, give glycerin enema; use syrup of senna as routine aperient. *Stiven.* 37

Arthritis, Chronic. TREATMENT. Certain joint cases, rebellious to all other treatment, can be arrested by proper diet combined with colonic lavage. Breakfast: Cereal, small amount; toast with butter; imitation cereal coffee. Between breakfast and lunch: Buttermilk, 2 glasses; water, 1 glass. Lunch: Clear soup (or lettuce or spinach); 1 roast potato; 2 slices toast; imitation coffee. Between lunch and dinner: Buttermilk, 1 glass; water, 1 glass. Dinner: Clear soup (or twice a week small amount roast chicken, or 1 egg); toast or lettuce; imitation coffee; apple sauce. Between dinner and bedtime: Buttermilk and water. Daily simple enema followed by high colonic lavage with about 1½ quarts normal saline solution, until washings return fairly clear. Adapt diet to individual caloric needs and with constant regard to weight. *Pemberton.* 45

Asthma, Bronchial. TREATMENT. 1. When patient first seen during an attack, give 10 grains (0.6 Gm.) of blue mass or an equivalent amount of calomel with soda, followed by salts next morning. 2. Morphine and atropine injection, only if patient suffering intensely. 3. Sodium iodate, gr. iv-v (0.25-0.3 Gm.) every four to six hours, in capsules, given with food (contraindicated in the tuberculous, especially if hemoptysis). 4. Repeat mercurial purge if attack not markedly better in twenty-four hours. 5. Diet. During attacks: Broths every two to four hours. In intervals between attacks: Enough plain, coarse food to satisfy hunger and no more. Soups, clear of fat; fresh fish; raw oysters or clams; tender and lean meats; all vegetables except onions, cabbage, cucumbers, corn on cob; potatoes, peas, and beans only sparingly; only well-baked or toasted bread; rice, cereals, and eggs in moderation; no raw fruits; pastry, sweets, and any articles found by experience to disagree to be avoided. Careful scrutiny of patient's selection of foods required. Heaviest meal to be taken at noon; light supper. *Oettinger.* 37

Carcinoma, Esophageal. TREATMENT. Hydrogen dioxide, 1 dessertspoonful of 1 to 3 per cent. solution every hour, found to be valuable palliative measure where stenosis apparently complete. Within twenty-four hours stenosis is overcome, and later purées and even solid food can be swallowed. Subjective symptoms disappear and patients gain in weight. Measure of little use, however, in scirrhous form of cancer. *Fradiss.* 109

Cardiovascular Disease. TREATMENT. Ideal diet in presence of impaired circulation consists essentially of bread and butter, with some milk to supply fluid, and enough cheese to make up protein requirements; fruits and vegetables to be added in moderate amount. *Bishop.* 108

Chorea. TREATMENT. Twenty-five cases, in children of 8 to 19 years, in which ab-

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normal movements rapidly disappeared after 3 or 4 intravenous injections of 0.2 to 0.35 Gm. of salvarsan, given weekly. Recovery regularly after three or four weeks. General condition also always greatly ameliorated. *Marie and Chatelin.* Page 38

Constipation. TREATMENT. Stubborn constipation in infants is relieved by giving 1 dram (4 c.c.) of olive oil once or twice daily. Constipation in neurasthenics is also benefited. *Bram.* 47

Diabetes Mellitus. TREATMENT. For first two weeks restrict to careful antidiabetic diet, unless sugar in urine practically disappears in less time. Then cautiously increase carbohydrates, always warning patient of danger of overeating *permissible* articles. Should sugar persist, put to bed and restrict to 1 raw egg and 2 ounces of olive oil 3 or 4 times a day. Continue free use of a mildly alkaline drinking water. If any acidosis symptoms result, decrease amount of oil and give small quantities of carbohydrates. Proper mastication an important detail in treatment. For constipation, use: Olive oil, castor oil, glycerin, of each, 160 parts; gum arabic, 18; flavoring (oil of cassia or gaultheria), 0.5. Best diabetic flour is: Unadulterated soy-bean flour, 350 parts; unground poppy seed, 30; eggs, 250; pure baking powder, 15; water, 340. *Hodgson.* 39

Edema of Extremities. TREATMENT. Where edema of legs resisted all measures, especially where incision not permitted, good results obtained from local use of hypertonic saline solutions—25 to 50 Gm. (¾ to 1½ ounces) of sodium chloride to 1 liter (quart) of distilled water. Soak gauze compresses lightly in this, wrap around legs, and cover with thick layer of absorbent cotton, held in place by bandages. Leave dressing on overnight. Equally good results in edemas due to broken compensation, Bright's disease, etc. *Pathault.* 40

Filariasis. TREATMENT. Case of pronounced elephantiasis of lower extremities in which two intravenous injections of 0.6 Gm. of salvarsan caused disappearance of filariæ from blood and great reduction in size of limbs, weight falling from 400 to 244 lbs. *Barnes.* 1

Fracture of Hips, Intracapsular. TREATMENT. Longitudinal traction alone often unsatisfactory in results. Longitudinal combined with lateral traction, however, or wide abduction in plaster of Paris, usually gives serviceable limb. Former far easier to apply and the more suitable the older the patient. Plaster-cast method requires much skill in application, and is better adapted to young patients. *Davis.* 41

Gastric Ulcer. TREATMENT. Best preparation of bismuth to use is the subnitrate precipitated from a boiling-hot mixture. Cleanse stomach in morning with 150 c.c. (5 ounces) of Carlsbad or Vichy water, and three-quarter to one hour later give 10 to 20 Gm. (2½ to 5 drams) of bismuth subnitrate suspended in tumblerful of warm water. Administer daily, and increase or reduce dose, or discontinue, more or less rapidly, according to clinical course (Fleiner). Another method is to give same doses of bismuth finely suspended in oil, several times daily. Stepp recommends following bismuth suspension: Bismuthi subnitratis, gr. xlv (3 Gm.); chloroformi, ♏xv (1 c.c.); aquæ destillatæ, 5 fluidounces (150 c.c.); 1 to 2 tablespoonfuls to be taken hourly for several weeks. *Aaron.* 42

Hemoptysis. TREATMENT. Subcutaneous injection of 40 c.c. of sterile gelatin solution recommended. Causes in twenty-four hours rise in viscosity of blood by 1.4 of original value. *Cmunt.* 110

To prevent onset of hemoptysis where sense of tightness in chest or sputum blood-streaked: 1. Absolute rest. 2. Nitroglycerin solution, ♏xv (1 c.c.), or sodium nitrite, gr. xv (1 Gm.), in ℥ij (60 c.c.) of water; ℥j (4 c.c.) every four hours for two or three days.—Where actual hemorrhage: 1. Put to bed in comfortable position. 2. Reassure patient. 3. Amyl nitrite inhalation. 4. Atropine, gr. 1/50 (0.0012 Gm.) hypodermically, to be repeated 2 or 3 times in next twenty-four hours. 5. Or, nitroglycerin, gr. 1/100 (0.0006 Gm.) hypodermically, at first every half-hour for 3 or 4 doses, later less often; followed by sodium nitrite, gr. j (0.06 Gm.) every three or four hours. 6. Where excessive nervous irritability, or cough troublesome: Morphine. 7. In abundant hemorrhages: Apply bandages to middle of arms and thighs. 8. Epinephrin hydrochloride, 5 drops of 1:1000 solution, or suprarenal substance, 3 grains (0.18 Gm.), every three or four hours; or pituitary extract, injected subcutaneously. *Frazer.* 111

Hemorrhoids. TREATMENT. Olive oil a good demulcent laxative in hemorrhoids and anal fissure. *Bram.* 47

Influenza. TREATMENT. Care to secure proper ventilation, alimentation, and elimination necessary. Local treatment of air passages important, to destroy causative bacillus. In the morning: 1. Cleanse nose and throat with spray of Dobell's solution or 1:400 phenol solution at 85° to 90° F. 2. Swab with: Balsam of Peru, gr. x (0.6 Gm.); ichthyol, gr. v (0.3 Gm.); glycerin, q. s. ad f℥ij (60 c.c.). In the evening: 1. Repeat spray. 2. Have patient inhale for one-half hour creosote, 8 c.c. to quart of water. 3. Swab nose and throat with epinephrin solution. 4. Fifteen minutes later swab with argyrol, 10 per cent. Hydrotherapy of value in chronic cases. In severe chronic cases, sojourn in an even and sunshiny, but not

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tropical or subtropical, climate desirable. *Jones.* Page 111

Iritis. TREATMENT. Sinus infection considered responsible for many cases of intraocular inflammation. Following treatment used with good results in 26 cases of iritis and 5 of idiopathic retinochoroiditis: Saturate tampon, of such size as to fit snugly between middle turbinate and septum and extend from exterior portion of nose to sinus posteriorly, with aqueous argyrol solution (gr. xl-℥j) and introduce. This will drain ethmoid and other sinuses. To drain antrum, place tampons under scroll of middle turbinate and above upper part of inferior turbinate. Allow to remain twenty minutes to one hour. *Manning* 112

Lead Poisoning. TREATMENT. Obstinate lead colic relieved and constipation overcome by giving a tumblerful of olive oil once daily. *Bram.* 47

Leprosy. TREATMENT. Salvarsan used in 5 cases. Caused clinical improvement, cases showing partial or complete resolution of nodules of tissue examined. Effect is not specific or permanent. *Wellman.* 114

Leukemia. TREATMENT. Benzol (benzene) used in 6 cases of myeloid leukemia and 1 of Hodgkin's disease with good results. Given in capsules each containing 0.5 Gm. (8 minims), with same amount of olive oil; at first, 4 capsules daily, after meals, then 2 capsules 3 times daily, later 4 times, and finally 5 times. Leucocyte count gradually lowered to normal, fever disappears, and general condition improved. Effectual where other measures, including X-rays, have failed. *Kiralyfi.* 114

Marasmus. TREATMENT. Large series of infants with marasmus, congenital or acquired, and premature infants, treated with marked success by external application of codliver oil. Wrap child in oil-soaked flannel from armpits to iliac crests, and cover with oiled silk. Remove flannel, wash skin with soap and water, and reapply flannel, at twelve-hour intervals. Give only water by mouth, in ample quantity. Treatment causes rise in temperature, loss of dryness and wrinkles of skin, and an increase in weight, often considerable. Feed by mouth only when temperature has been normal for a number of days and skin shows increase in fat and water content. *Gray.* 114

Otitis Media. TREATMENT. Where discharge copious, syringe ear gently but thoroughly 2 or 3 times daily with saturated boric acid solution, or, better, mercury bichloride solution, 1: 8000, sometimes later 1: 4000. Where discharge scanty, first cleanse ear with cotton mop, or if acute stage of attack passed drive out discharge by Valsalva method or Politzer bag and wipe out again. Then have patient incline head and pour in bichloride solution, allow to remain ten minutes, dry ear, not very thoroughly, and plug meatus with absorbent cotton. Do this not oftener than once daily. Exceptionally, especially where there is extensive destruction of drumhead, insufflation of boric acid, or of boric acid and aristol or zinc oxide, equal parts, proves more efficacious than the mercury solution. *Theobald.* 116

Pneumonia, Lobar. TREATMENT. Sodium citrate internally found in most cases, especially in children, to cause fall in temperature, pulse, and respiration to normal within twenty-four hours; process in lung clears up soon after, third stage being apparently escaped. Administered in doses of 30 to 40 grains (2 to 2.6 Gm.) in adults every two hours, with a little citric acid or in lemonade. Dose for children to be calculated from 40-grain dose in adults. Drug to be continued till clearing up of process in lung complete. Active catharsis to be established at beginning of treatment. Sodium chloride should be supplied to system in about the normal daily amount (240 grains, or 16 Gm.), with the diet or otherwise. *Weaver.* 116

Poisoning by Illuminating Gas. TREATMENT. I. First stage, preceding loss of consciousness: 1. Fresh air. 2. Aromatic spirit of ammonia. 3. Effervescent sodium phosphate, to produce eructations and relieve nausea. 4. Oxygen inhalation. 5. Analgesics for headache. 6. Avoidance of violent exertion.—II. Second stage, patient unconscious, but breathing: 1. Howard artificial respiration, rhythmic compression of lower thorax, to assist breathing. 2. Oxygen, preferably under pressure. 3. Camphor, caffeine, digitalis, and strychnine hypodermically. 4. External heat, if indicated. 5. Massage of muscles after aërating lungs. 6. Treatment to be conducted in warm room. 7. If not prompt recovery, venesection and normal saline infusion, or use of "pulmotor."—III. Third stage, patient unconscious and not breathing: 1. Same measures as in preceding stage. 2. Blood transfusion. 3. Artificial respiration by Schäfer method, patient prone. *McCombs.* 44

Prurigo. TREATMENT. 1. Good hygiene. 2. Generous diet. 3. Codliver oil. 4. To control itching: Baths with starch, sulphurated potash, or creolin; tar, pure or mixed with olive or codliver oil; codliver oil ointment, with betanaphthol or phenol added. 5. To dissipate any coexisting eruption: Sulphur, in soap, solution of potassium sulphide, or thermal waters; codliver oil, covered with bandage and impermeable varnish; codliver oil, 3 parts, and white wax, 1, used as pomade, with or without covering; alternate injections of phenol and pilocarpine; X-rays; thyroidin. 6. In rebellious and severe cases: Soap patient in warm bath and apply a tar preparation or Vleminckx's solution. 7. In stage of lichenification: Radium. *Morris.* 50

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Scalp Wounds. TREATMENT. Shave scalp for some distance around wound, either dry or wet with alcohol; after area dried, paint with tincture of iodine and wash off surplus with alcohol. In suturing use figure 8 sutures, not too tight. Where parts badly torn, provide free drainage; stitches not to be too close together. In all fractures of skull give 40 to 60 grains (2.6 to 4 Gm.) of hexamethylenamine daily. *Harper.* Page 119

Syphilis. TREATMENT. Following plan advised: Intravenous salvarsan injection, immediately followed by series (12 to 15) of intramuscular mercury salicylate injections, and later by 4 to 6 intramuscular injections of small doses (0.1 to 0.2 Gm.) of salvarsan in sesame oil. After this start new series of mercury salicylate injections, to be continued at increasing intervals during first year of disease. A number of the cases thus treated appeared to be cured. *Eisenstaedt.* 53

Immediate tolerance to neosalvarsan is greater than to salvarsan, but this does not warrant use of relatively larger doses of former. Neosalvarsan to be preferred to salvarsan where latter badly borne and in cases of tabes, paresis, arteriosclerosis, cardiac disease, *i.e.*, in all patients in whom too marked a reaction is to be avoided and where only small doses are indicated. *Bayet.* 115

Tabes Dorsalis. DIAGNOSIS. Spontaneous fractures not infrequently an initial or early symptom of tabes. *Taylor.* 54

Tuberculosis, Pulmonary. DIAGNOSIS. Value of percussion in earliest stage emphasized. With patient lying on back on couch, employ light percussion on terminal phalanx of a finger firmly pressed on spot under examination. Three characteristic dull areas on either side should be sought, which may all be present and of considerable size while apex is still very fairly resonant: 1. Opposite inner part of first intercostal space (percussing anteriorly) and inner part of suprascapular fossa (posteriorly). 2. Opposite outer part of same interspace, and outer part of suprascapular fossa. 3. In upper part of lower lobe, percussing posteriorly at end of spine of scapula, and anteriorly in second interspace. *Lees.* 54

Quantitative examination of albumin in sputum easily made and useful in diagnosis in doubtful cases. Technique as follows: To 20 c.c. of sputum as free from saliva as possible add a 3 per cent. acetic acid solution slowly, while agitating, until mucin is coagulated; add 2 parts of distilled water to sputum, shake well, filter through several layers of gauze, add a few drops of acetic acid solution, filter, and test filtrate for albumin by any ordinary test. If more than a trace present make quantitative test with Esbach's tube and multiply reading by 3 to get percentage. All active cases give positive reaction. *Works.* 117

TREATMENT. 1. Inhalation of following solution: Creosoti, phenolis, spiritus chloroformi, ana 3ij (8 c.c.); tincturæ iodi, spiritus ætheris, ana 3j (4 c.c.). Two Yeo inhalers to be used on alternate days, cleansed by immersion in boiling water and careful drying. Patient to pour 6 to 8 drops of solution on felt of inhaler *every hour* during daytime, and once or twice during night if awake. Petrolatum or lanolin cold cream to be smeared over nostrils and upper lip before use of inhaler at first. 2. Period of rest in bed at beginning of treatment. 3. Treat digestive disturbances. 4. Give a sufficiency of easily digested food; malted milk, dissolved in scalded whole milk, after each meal. 5. Careful disinfection of mouth 4 times daily, after the milk; antiseptic sprays for unhealthy conditions of fauces. Forty-eight complete recoveries in 70 cases thus treated. *Lees.* 54

Hydrotherapeutic measures, to be employed in 4 successive stages or steps, described: I. Ablution, beginning with water at 90° F., gradually reduced, by 2° daily until 60° F. reached; followed by drying and, if possible, exercise in open air. II. Affusion. With patient standing in water at 105° F., water at 85°, gradually reduced to 60°, is thrown over back and chest. III. Cold rub. With patient standing in water at 105°, a sheet is wrung out in water at 80°, gradually reduced to 50°, and actively rubbed till sheet warm. IV. Drip sheet. Same as last, with sheet dripping; patient rubbed and slapped for two minutes; water at 70° then poured over shoulders, and friction applied till sheet warm; same procedure rapidly repeated over other parts of body. *Baruch.* 56

Olive oil, ½ ounce (15 c.c.) two hours after each meal, increased weekly by ½ ounce up to 3 ounces, found to cause considerable gain in weight. *Bram.* 47

Sodium cinnamate subcutaneous injections found superior to cacodylates in all varieties of cases in which a general tonic effect required. Initial dose, contents of 5 c.c. (1¼ drain) ampoule, including 0.5 Gm. (⅝ grain) of the cinnamate; this to be rapidly increased by one-half, bulk of solution, however, being kept the same. Injections given daily. *Laborde.* 118

Counterirritation with mustard sometimes found very effective in night-cough. Soft capsules containing beechwood creosote, 1 minim (0.06 c.c.), oil of sandalwood, 5 minim (0.06 c.c.); oil of sandalwood, 5 grains (0.12 Gm.), given 4 or 5 times daily, may be of decided benefit for cough. *Gordon.* 119

Typhoid Fever. TREATMENT. Olive oil useful as a food in 1- to 3- ounce (30 to 90 c.c.) doses 3 times daily. Also useful as a laxative; high injections of lukewarm oil may be given. *Bram.* 47

Collective statistics as to results of use of typhoid vaccines show 423 cases, with only 5.4 per cent. deaths. Dosage used by author: Initial hypodermic injection of 500,000,000,

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repeated at four-day intervals as long as required, and increased by 100,000,000 each time. Stock-vaccine injections made just under skin over insertion of deltoid or over tensor vaginæ femoris. *Callison.* Page 57

Vincent's Angina. TREATMENT. In mild cases, best results from use of trichloracetic acid. Membrane first removed by hydrogen peroxide and wiping with cotton swab; ulcer then anesthetized with 10 per cent. cocaine solution, and trichloracetic acid applied a few minutes after. Usually 3 or 4 applications at 2- or 3- day intervals necessary. Tincture of iodine preferable where ulceration extensive. For pain, orthoform. Carious teeth to be cared for. General condition also to be improved. *Halstead.* 58

Vomiting of Pregnancy, Pernicious. TREATMENT. Sodium bicarbonate, 5 to 50 grains (0.3 to 3 Gm.) a day, recommended. Part of it often vomited, but some retained. Continue for a week after vomiting stopped. Bowels to be well cleared by colonic flushing. Veronal also found useful. *Lyon.* 59

Whooping-cough. TREATMENT. Pertussis bacterin used in 40 cases. Disease not shortened, but bacterin causes, after preliminary slight aggravation, well-marked, and sometimes remarkable, symptomatic improvement in a certain proportion of cases. Best results produced at the height of the disease. Give 2 or 3 full doses—20 to 50 million bacteria each—at five-day intervals. In young infants moderate doses should be given early; they diminish severity of disease and minimize complications. *Zahorsky.* 48

Wounds. TREATMENT. Treat all wounds on which great force has been exerted, and especially those contaminated by soil and dirt-covered objects, as if infected with gas bacilli. Leave open where possible and irrigate thoroughly with peroxide. Bandage lightly, if at all. Inspect frequently and irrigate often. On first sign or symptom of infection, take smear and examine for *B. aërogenes capsulatus.* Open wound freely, if sutured, and if on limb place latter in bath or irrigate continuously. If condition extensive, expose field widely to air by free incisions. (Do not employ peroxide in full strength or inject in confined spaces or directly under tissues.) *Cramp.* 42

Wounds of face and hands should be closed with subcuticular stitches, especially in women. To prevent subsequent stretching of scar, close superficial fascia with interrupted fine silk sutures before applying subcuticular stitches. After injuries to soft parts of hand, cleanse quickly by immersing in gasolene; after latter has evaporated, sterilize parts with tincture of iodine and alcohol. *Harper.* 119

Application, in gunshot wounds, of steaming towels wrung out in water as hot as can be borne, during thirty minutes night and morning before wound is dressed, recommended. To be continued till all inflammation subsides. *Griffith.* 110

Book Reviews

GENITOURINARY DISEASES AND SYPHILIS. By Henry H. Morton, M.D., Clinical Professor of Genitourinary Diseases in the Long Island College Hospital; Genitourinary Surgeon to the Long Island and Kings County Hospitals and the Polhemus Memorial Clinic, etc. Third Edition, Revised and Enlarged. Octavo of xvi + 605 Pages, with 275 Halftones and Photo-engravings and 18 Full-page Plates, including 11 in Colors. Philadelphia: F. A. Davis Company, 1912. Cloth, $5.00, net.

Since the last edition of this useful work appeared, in 1906, our knowledge of syphilis, as the author states in the preface, has undergone a greater increase than during the four preceding centuries. The discovery of the micro-organismal cause of the disease, of the Wassermann reaction, and of salvarsan has been the source of a tremendous recrudescence of activity in the scientific study of this disease. Other recent advances in genitourinary surgery include the establishment to a higher degree of precision of the respective indications for suprapubic and perineal prostatectomy, improvements in the pre- and post- operative treatment of these cases, the introduction of the indigo-carmine and phenolsulphonphthalein tests of renal functional capacity and of improved instruments for the examination and treatment of the posterior urethra, and the application of the high-frequency current and more extensive bladder resections in the treatment of vesical tumors. All these newer methods have been given due consideration in the present edition.

In the author's discussion of salvarsan it is evident that he has availed himself of the most recent literature on the subject and has duly discarded some of the methods advocated and views held when the remedy was first introduced. Thus he believes, with other syphilographers, that the intravenous injection of salvarsan is the only method deserving serious consideration. With proper application of the remedy and healthy organs, there is no danger to life. He strongly favors the combined salvarsan and mercurial treatment, and agrees with Roscher in advising that the treatment of syphilis be begun with a couple of injections of mercury bichloride or salicylate, to prevent deafness, followed by salvarsan, and a few days later by an injection of calomel, to be repeated 6 or 8 times at weekly intervals. If in spite of the vigorous treatment the Wassermann reaction remains positive,

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a second injection of salvarsan should be given. A chapter on the theory and technique of the Wassermann test has been contributed to the book by Dr. Alfred Potter.

Though of moderate size, the book is systematically planned, concise, and very complete. The illustrations are numerous and nearly all excellent. As in its former editions, it can be unreservedly recommended as meeting the requirements of the practitioner.

PATHOLOGY AND TREATMENT OF DISEASES OF WOMEN. Fourth Edition, Rewritten by A. Martin, Professor and Direktor, and Ph. Jung, Professor and Oberarzt, der Universitäts-Frauenklinik in Greifswald. Only Authorized English Translation, written and edited by Henry Schmitz, M.D., Professor of Gynecology, Chicago College of Medicine and Surgery, Medical Department Valparaiso University; Attending Surgeon, St. Mary of Nazareth's Hospital, etc. Octavo of xvi + 475 Pages, with 187 Illustrations, of which 25 are in Colors. New York: Rebman Company, 1912. Cloth, $5.00, net.

This work is already in its fourth German edition and is evidently highly appreciated on the continent of Europe. Its translation, while not precisely filling a long-felt want, since so many comprehensive works on this subject have recently been appearing in English, is valuable in that it presents to the profession on this side a systematic exposition of the views held by two well-known German gynecologists, and adds to the information available in English books the results of their extensive experience under conditions in some respects rather different from ours.

The first fifty pages of the work are devoted to the anatomy and physiology of the female pelvic organs, to the technique of gynecologic examinations, anesthesia, asepsis, etc. Next there is a short section on menstruation and its disturbances, followed by a detailed discussion of diseases of the vagina and uterus, occupying over one-half the entire book. Throughout, considerable space is devoted to treatment, though the pathology is also very fully considered, and is illustrated by a large number of cuts which depict the conditions both macroscopically and microscopically. In the section on treatment of perineal lacerations, in which, by the way, Emmet's procedure is not referred to, we note that the authors favor coaptation of the wound-surfaces immediately after the occurrence of the tear. In acute gonorrheal infection the writers proscribe internal remedies entirely and limit local measures to those promoting cleanliness and relieving pain. An illuminating section on atrophy of the uterus is presented.

The remainder of the book is devoted to diseases of the tubes, ovaries, pelvic connective tissue, and pelvic peritoneum, and to operations on the uterus. The work closes with a list of 280 references corresponding to authors mentioned in the text, and an index. If any criticism of the English presentation is warranted it is that the translator has retained in the text a large variety of Latin terms such as ligamenta rotunda, excavatio recto-uterina, retroflexio uteri gravidi, sectio cæsarea, abrasio mucosæ corporis, tumors of the ovarium, and even evacuatio alvi, expressions well calculated to grate on the sensibilities of unaccustomed American readers. This is, of course, a readily eliminable defect which does not diminish the great practical value of the book.

THE TREATMENT OF SHORTSIGHT. By Prof. Dr. J. Hirschberg, Geh. Med. Rat in Berlin. Translated by G. Lindsay Johnson, M.D., F.R.C.S. Pp. 123, with 12 Illustrations. New York: Rebman Company, 1912. Cloth, $1.25.

This work consists of a comprehensive lecture on myopia delivered by the late Prof. Hirschberg at the request of Prof. v. Leyden. The author goes thoroughly into the subject, beginning with a historical introduction, the fundamentals of refraction as applied to myopia, the etiology and the incidence of the condition in its various degrees, the treatment, and the complications of myopia. Of interest are the author's recommendations concerning the selection of glasses in myopia, founded on the observation of "very many thousands of myopes." He states that in low grades of myopia (between 0.75 and 3 D.) one may allow the full correction to be continually used. In medium grades (from 3.5 to 6 D.), however, entirely or nearly corrected glasses are to be used only for distance, while for near work weak glasses or none at all should be given. In the higher grades of myopia two pairs of glasses should always be given, one for distance, and another, possessing only about the power of the former, for near work. These are views with which undoubtedly not all American specialists will agree. In discussing the prophylaxis of myopia, the author lays stress on the injurious action of near work in young children, and advises that drawing and hand work be entirely omitted during the first years of schooling. The complications of myopia are very fully discussed. The book contains much useful material in the way of reports of original observations and cannot fail to be of interest and value to all who are specially concerned with affections of the eye.

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The General Field

Conducted by A. G. CRANDALL

The Science of Nutrition

It is beginning to dawn upon thinking people, including physicians, that our knowledge of the general principles of nutrition leaves much to be desired.

Not only is there a good deal of mystery to be dispelled in the selection of the dietary, but the increasing cost of a great number of food substances makes it possible for only a few favored families to provide themselves with that variety of animal and vegetable foods which a suitably selected menu implies.

The great value of fresh vegetables is being recognized more and more, but to many city dwellers their high cost makes them inaccessible. As important food salts are supplied in this form, the public health suffers accordingly, and, as transportation is a very large factor in the cost of such articles as lettuce, celery, spinach, etc., it may be that some time Dr. Lorand's suggestion may bear fruit, and such vegetable substances be supplied in liquid form with the design of furnishing extractive salts at a less expense in money, not to mention the lesser tax upon digestion.

A Question of Psychology

That poetic soul who discovered that "music hath charms to soothe the savage breast" probably would never have made such a suggestion had he lived in the twentieth century.

A more recent observer is responsible for the theory that practically all young specimens of the human race are potential savages. And at no time in the world's history has so much alleged music been invoked for the delectation of the young human savage as at present.

Just how much benefit or the reverse may be reflected to the patrons of the "movies" is hard to say. But it is unfortunate that the cheap (in all senses) comedian should be brought into the amusement program. A decent succession of films may be harmless and in many instances instructive. But it is undoubtedly a fact that the specialty artist as exhibited in certain moving-picture "palaces" adds a reprehensible element, and, if censorship of films by the police is justifiable, it should with greater propriety be brought to bear upon the coarse jokes of the specialty man whose advent gives the proprietor an excuse to charge ten cents instead of five.

The moving-picture shows provide much that is calculated to provide essential amusements for the adolescent mind. But it is unfortunate that bright lights and cheap glitter, which can be enjoyed at such moderate expense, should be associated with cheaper music and coarse jokes.

The Uplift for All

There is nothing new in the present uplift movement so far as the doctor is concerned. From time immemorial the physician has been actively engaged in benefiting his fellow- man and woman, sometimes intentionally and often without any deep-rooted design on his part. The family that finds it cheaper to move than pay rent has always placed a high valuation on the clinical experience that the doctor was likely to secure as his only reward for treating the family aforesaid. And the doctor has shrugged his shoulders and accepted the situation as one of the common incidents of his calling.

But now the doctor is likely to find the glory of philanthropy a divided field. With the minimum wage, restricted

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hours of labor, and employers liable for all industrial accidents, medical charity becomes but one feature of the general scheme. Philanthropy is to become the rule rather than the exception.

Paternalism now pervades the atmosphere. Usually the hard-headed common sense of the community has been sufficient to detect the fallacies of unrestricted waves of public sentiment and the healthy reaction could be counted upon to restore the normal equilibrium.

Just how much the present situation may be complicated by the prejudices naturally and properly existing as regards the great industrial combinations and their ruthless methods remains to be seen. But that there is a direct connection between these combinations and some of the prevailing eleemosynary legislation is beyond question.

Sex Antagonism

A woman writer who attempts to place an atmosphere of romance and heroism about the militant suffragettes of England remarks on the "sex antagonism" developed among the men by the crusade. This manifestation seems in her view to justify a continuance of the outrages. She says that from now on there will be no holding back because of delicacy, but that the warfare will be relentless.

The sex antagonism complained of has been, of course, discovered among those who have attempted to curb the spirit of lawlessness. That experienced among the militants themselves is but holy zeal.

There is a simple and appropriate parallel for these mental changes among the militants. It is found in the psychological development of the common housebreaker, who begins as a sneak thief afraid of his shadow and ends in the yeggman armed with deadly weapons which he does not scruple to use relentlessly if there is danger of apprehension. The burglar finds much social antagonism to his occupation and soon feels justified in adding murder to his other crime if danger appears in his way. Quite likely he also has a feeling of sex antagonism for the frightened woman who shrieks for help when she sees some masked intruder removing the contents of her jewel box.

Altogether the sex-antagonism element in the English suffragette situation seems to be easily explained.

Time for a Change

Why should the physician continue to be the one authenticated instance of a philanthropist?

The altruistic scheme must always be first submitted to the acid test except where the doctor is concerned. Then no proofs are required.

The canny dealer who sometimes has need of the doctor in his household is very apt at securing return favors and, of course, a broad-gauged man like the doctor must not scrutinize the bills too closely.

Suppose when the coal and ice dealer puts in his suggestions as to the doctor's needs the tables could be turned and the doctor could be permitted to point out a few household necessities for the dealer. He could offer to examine the dealer's gastric contents, remove his child's adenoids, and straighten his wife's deviated nasal septum,—all at standard rates, bills to be payable in trade.

This would be something like an even deal, and on this plan not only would the physician's affairs begin to look up, but there would be such a renovating of rundown human systems as to give the vital statistics an unparalleled boom. No one in fact could complain, except possibly the undertakers, who taking one year with another seem to do very well.

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A Disappearing Class

The doctor who only uses a half-dozen remedies is not as common as formerly. He has found out that mental laziness is more reprehensible than the physical kind.

It is hard, as Lincoln said, to fool the people continuously. They sooner or later smoke out the routinist and with the kindly aid of the ever-ready local druggist are able to get for a small sum exactly what the "doc" is in the habit of prescribing.

It is an axiom of reputable business that the purchaser is entitled to a reasonable return for his money. It would be as fair for the tailor to deliver a ready-made suit of clothes as for the physician to hand out a routine prescription irrespective of the physical eccentricities of his patient.

And the druggist who gives the doctor away. How about him? Is it not about time for the doctor to make his patients wise as to that little drug-store custom of drawing manufactured Vichy, Kissingen, or Seltzer from the same reservoir.

Nothing pays the doctor or the druggist so well as perfect satisfaction among the general public.

Philanthropy Not Appreciated

It is a beautiful conception of brotherly interest when Uncle Sam proceeds to exercise benevolent supervision over the affairs of the Mexicans. Their appreciation, however, seems to be entirely under their control.

It is quite possible that if less of the concern over the disorder in Mexico was due to financial motives north of the Rio Grande there would be more gratitude experienced among the Mexicans when the alamo was sounded over danger to the Monroe Doctrine.

It does not really matter so much to Mexico whether the revenues resulting from exploitation of the natural resources of that country are shipped to Wall Street or Lombard Street.

Most of the unrest to be noted in different parts of the world ean be traced back to the hunters of fat dividends. When patriotism is appealed to in the interests of the money centers the response is not enthusiastic.

Organization is a good thing and essential to success in any occupation. But the rewards of organization go chiefly to those who have the highest ability to play the game. Evidently if organization is to be carried out to its logical conclusions one man may some day own the world.

A Sad Report from Standard Oil

Ever since their corporation was dissolved and their affairs generally chastened through the imperious demands of Attorney-general Wickersham, Standard-Oil dividends and prices have been moving skyward.

Because of diminished facilities and the steadily increasing demand, the price of gasoline has nearly doubled.

And with an estimated million automobiles in use in 1913, the situation is pathetic. It nearly breaks the hearts of the S.-O. directors to have to charge so much for gasoline, but with patriotic meekness they bow to the demands of the haughty Wickersham and, of course, when their Jersey charter is dissolved and they have to hobble along as best they may the cost of their products must necessarily be higher.

The explanation is simplicity itself.

As the prices of petroleum products continue to mount higher and higher, now and again some humble consumer may ask the reason why. But there will always be a lucid explanation. A noble

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patriotic corporation doing business under a Jersey charter was by the autocratic mandate of a certain Attorney-general dissolved, since which time, meekly bowing their necks to the will of authority, they have done as well as they could.

Certainly it is an unreasonable person who could complain.

The Boston Language

While the fleets of clipper ships, financed by Boston capital and loaded with fat cargoes of New Eng'and rum, have largely ceased to exist, and Boston patriotism is no longer allowed to manifest itself in undignified demonstrations, the hypnotic aura of Boston culture can be extended farther without re'ay than a message by the latest wireless transmitter.

A calm, dignified demeanor is not indigenous to any limited section of the globe. Even in the cosmopolite U. S. A. it can be located looking out in all directions from Jenkintown, Pa. But a dignified demeanor associated with a refined variety of Pennsylvania Dutch or the animated hyperbole of Illinois is one thing; a dignified demeanor with the Boston Language added is quite another.

It is a common aim in life to desire to be companionable and ingratiating socially. It is to be sure a weakness, but an excusable one. To extend outward the tentacles of acquaintanceship and have these well-meant overtures accepted cordially is a gratifying and not unusual experience.

But when the Boston Language and the calmness are encountered in combination, a creeping paralysis seems to overtake the genial bonhomie of Tunkhannock, LaSalle, and Winona; the speech becomes halting and purposeless. Meanwhile the Language moves majestically on until the complete subjugation of the listener leads to a pause.

Words are vehicles of speech, but the Boston Language is more than a procession of vehicles—it is the slow majesty of the glacier grinding to atoms the mere emotions of contemplation.

Improving the Outlook for Young Men

The agitation which is being noted in a l quarters as to the establishment of a minimum wage for women cannot fail to work to the advantage of young men.

Irrespective of the merits of the minimum wage question, it is evident that a large number of employers working under such a law must very considerably revise their methods. There are a large number of deserving young women who are capable of earning a moderate sum each week who are nevertheless likely to be a losing investment under the minimum wage schedule. Rather than lose money on them, the employer, of course, has the privilege of discharging them.

The business house that must pay ten or twelve dollars as a minimum wage to women may decide to do without them to a considerable extent and employ young men who can be negotiated with on a strictly business basis. Working out this way the minimum wage law cannot fail to accomplish a great deal of good for society in general.

The young man has had pretty hard sledding in recent years because of the tendency in many business houses to employ a considerable number of young girls at moderate wages to fill positions carrying with them little or no responsibility. The minimum wage law cannot fail to bring about a readjustment, thus providing a multitude of young men with what they have not been able to secure of late—an opportunity.

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Original Articles

MYATONIA CONGENITA.*

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IN 1891 Werdnig[1] and in 1893 Hoffman[2] described a variety of progressive muscular atrophy in infants which, although pathologically it presents the picture of the classical myelopathy, nevertheless clinically differs from the latter. The characteristic symptoms are as follows: A paretic condition of the extremities and of the musculature of the trunk, so that the child cannot stand or sit up; looseness of the joints; muscular atrophy, generalized and symmetrical; some adiposity; absence of reflexes; no sensory disturbances; sphincters intact; no involvement of the cranial nerves. Particularly characteristic of this affection are its familial character and its short duration, viz., from two to three years. Pathologically, a degenerative state of the cells of the anterior horns in the spinal cord was found.

In 1900 Oppenheim[3] described under the name of myatonia congenita an affection of early childhood with the following characteristics: There is an atonic state of the muscles of the trunk and of the lower extremities, sometimes also of the upper. The child cannot sit up or stand. Active movements are feeble; although the patient appears paralyzed, nevertheless a close examination reveals the presence of some power. The knee-jerks are either lost or diminished. Electrical excitability is likewise either lost or diminished. Pathologically, no definite changes have been found in the spinal cord.

* Concerning patients presented to the Philadelphia Neurological Society, Oct. 25, 1912.

1 Arch. f. Psych., p. 437.

2 Deut. Ztschr. f. Nervenheilk.

3 Monatschr. f. Psych. u. Neurol.

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Spiller observed some alteration in the muscles. Oppenheim believed that there is a delayed muscular development and perhaps a delayed development in the cells of the anterior horns.

It is evident from the description of Werdnig-Hoffman's type and from Oppenheim's original description that there are many features common to the two conditions. In both cases the symptoms appear at an early age in infancy. In both the child presents a generalized paretic condition of the extremities and of the trunk and it is difficult to tell whether there is a genuine atrophy, as the flabbiness of the muscles is generalized. Again, in both cases the reflexes may be abolished or diminished, sensations either preserved or decreased, and electrical excitability either abolished or decreased. The only difference in the original descriptions of these authors is found in the fact that in Oppenheim's type there is a tendency to improvement under treatment, while Werdnig-Hoffman's patients live but a short time,—from a few months to two or three years; the latter, too, bear a strictly familial character.

Between the period of Werdnig-Hoffman's first publications and that of Oppenheim's a series of cases have been put on record by various authors which present many points in common with the above form, but at the same time differ from it in some respects. Since Oppenheim's first publication many observations have been recorded which either reproduce his type, *in toto* or only partly, or fall into Werdnig's form of muscular atrophy, or, finally, present features common to both affections. Even pathologically, variations in the findings have been observed as far as Oppenheim's disease is concerned. Baudouin, for example, found diminution in size of the cells of the anterior cornua and chromatolysis in the nuclei of the sixth and twelfth cranial nerves; also changes in the muscles. Reyer and Helmholtz described only muscular changes in their cases, but unfortunately the nervous system was not examined. Spiller's finding was mentioned above. In Beevor's case the clinical picture was that of Oppenheim's and Werdnig's type combined, and pathologically he found marked atrophy of the cells of the anterior cornua, slight involvement of the posterior columns, and atrophy of muscular fibers. Rothmann, of Berlin, describes a case of typical myatonia congenita during life, and *post mortem* found vacuolation in the anterior cornua through the entire cord, diminished size of the cells, chromatolysis in the nucleus of the hypoglossus, and marked atrophy of the muscles.

Moreover, the family character of Werdnig-Hoffmann's disease cannot be considered altogether pathognomonic, as in the cases of Bruce and Thomson, Ritter, Bruns, Delille and Boudet, Beevor, Sevestre, and Goett the family histories were totally negative. The very brief duration of Werdnig-Hoffmann's disease has also been found to vary. Thus, the patient observed by Bruns lived until the age of 15.

That clinically it is not always possible to make an absolutely certain diagnosis is seen, in particular, from the case of Finkelnburg.[4] This case

[4] Deut. Ztschr. f. Nervenheilk., 1908, p. 453.

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during life tallied completely with the cases first described by Werdnig and Hoffman, but *post mortem* there was no trace of changes in the central nervous system; a typical muscular dystrophy was found.

It is therefore evident that between myatonia congenita and infantile muscular atrophy as described by Werdnig-Hoffman there are many intermediary forms, and in the light of our present knowledge it is difficult in every case to decide as to the myelogenous or myogenous origin of the state of the musculature. It is not at all impossible to presume that in all such cases we are dealing with a prenatal disturbance in the nutrition of the cells of the anterior cornua, which in some cases leads to their destruction, thus producing Werdnig-Hoffman's type, while in other cases it remains slight, diminished muscular tone being the sole result. Such a possibility explains the insusceptibility to improvement manifest in one case and the more favorable influence of therapeutic measures in the other.

Two cases have recently come under my observation. The first undoubtedly presents symptoms referable to both the diseases described. We find here the general picture of muscular weakness and the conditions as regards sensation and reflexes common to both affections. The family character is absent, but, as we have seen above, this feature is not absolutely pathognomonic of Werdnig-Hoffmann's type. The improvement observed after a vigorous treatment of four months' duration speaks in favor of Oppenheim's disease. The case presents some interesting peculiarities not commonly observed in either affection. Optic atrophy has never been observed in all the cases reported. It was found pronounced in this patient. The child's malformed cranium and the fact that the Wassermann test was positive suggest the possibility of congenital syphilis as the cause of nutritional disturbance in the cells of the anterior cornua during intra-uterine life. Herein lies probably the reason for the favorable influence of the large doses of iodides used in this particular case.

The second case resembles more the type of infantile muscular atrophy than myatonia congenita. The treatment in this case was the same as in the first, but the improvement has been very slight.

The detailed histories of the cases are as follows:—

CASE I.—Girl, colored, aged 2 years; born at term and normally. Had no disease common to children. The mother had hemorrhages from the rectum and nose through the entire pregnancy. At the time of my first examination made four months ago she presented the following condition: She is unable to sit up; her trunk drops forward when she is placed in a sitting position (see illustration). The head falls either backward or forward; the child cannot hold it erect. The four limbs are flaccid and there is no attempt on the patient's part to move them. When they are stimulated by a pin there is a faint effort at withdrawal. The musculature over the entire body is flabby, although there is no evidence of localized atrophies. None of the muscles are fully developed. The entire body appears emaciated. Electrical stimulation shows a considerable diminution of response to both faradic and galvanic currents. There are no reactions of degeneration. It is interesting to note that the patient can stand intense electrical currents without manifestations of pain. Sensations are evidently preserved; although the patient is unable to move her limbs in response to a pinprick, she cries every time she is touched. The tendon reflexes are all abolished. The plantar

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reflex is variable, sometimes in flexion and sometimes in extension. The abdominal reflex is absent. The left foot is in the equinovarus position. The skull presents some peculiarities. The middle of the forehead protrudes; the right occipitoparietal bones are flattened. The cranial nerves, except the second, are intact. The eyes, examined by Dr. Swindells, present the following condition: Both optic nerves are atrophic, particularly in the temporal halves. The arteries and veins are threadlike. There are no apparent areas of choroidal disturbance in the eyegrounds, and the macular regions appear normal. There are no gross palsies of extra- or intra- ocular muscles. The

Case I. Attitude in sitting position, showing forward drooping of trunk.

child sees slightly when objects are held close and, it seems, more especially if they are held somewhat to the right or left.

The child cannot utter a single word and is unable to recognize surroundings. Another peculiarity is found in the process of teething. When she was only 7 weeks old two upper incisors appeared. Then the growth of the teeth stopped for a period of five months, when they began to grow again. The sphincter of the bladder is not controlled by the patient. She is obstinately constipated. A Wassermann test made at two different times was positive.

The patient was on a vigorous antispecific treatment and promptly commenced to show signs of improvement. Daily massage, passive exercises, and hydrotherapy applied systematically were persistently kept up. At present improvement is seen in all

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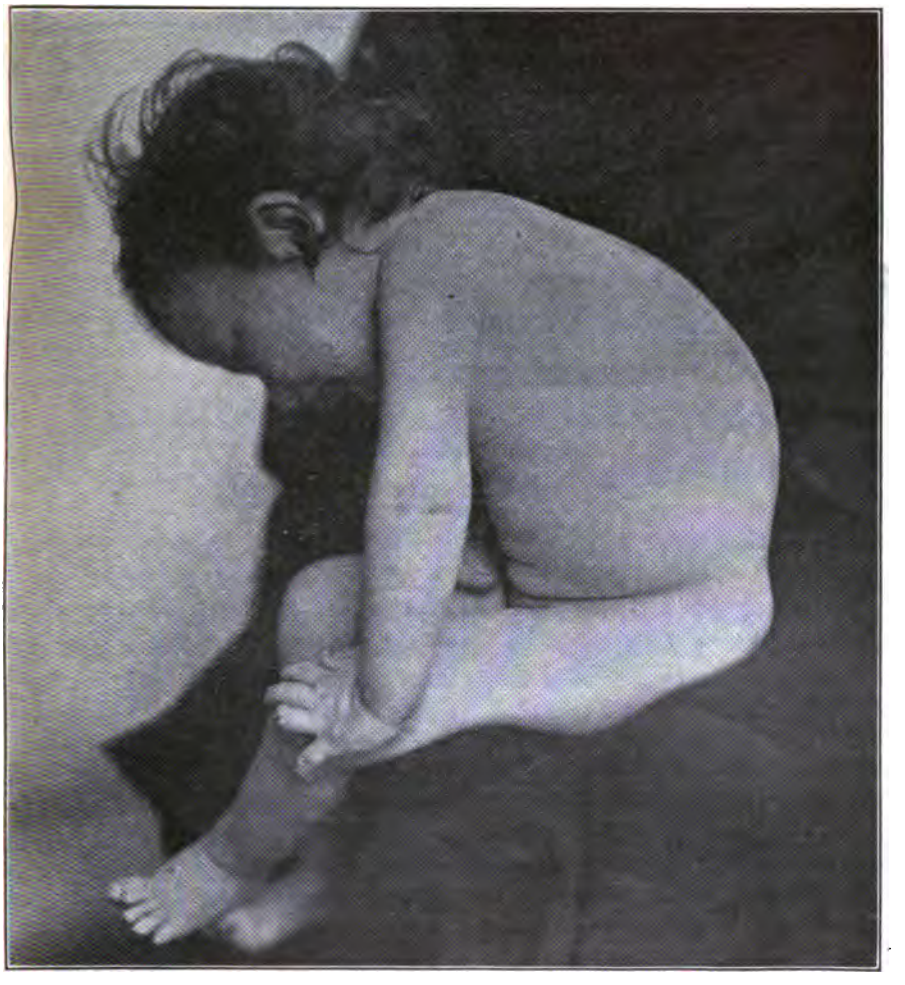
the somatic manifestations. The child, when placed in a sitting position, is able to maintain itself for some time. The head is likewise kept erect for a short time. The arms and legs are moved, although imperfectly. The right hand is constantly kept in pronation and in the wrist-drop position, although the patient can supinate when stimulated. There is no rigidity in the limbs, and the former flaccidity has been reduced. The patient responds to stimulation quite promptly. The electrical reactions are the same as upon the first examination, viz., only diminished. The musculature of the



Case II. Same position of trunk as in the first case.

limbs has somewhat increased in size. The child is still unable to hold objects in her hand for any length of time, although this condition is somewhat improved. The reflexes are still absent, and the toe phenomenon is still variable. The ocular condition and the mentality are unaltered.

CASE II.—Girl, white, aged 3 years; born normally and at term. Family history is negative. She never could walk or stand. When seated, the trunk becomes curved and falls forward (see illustration). The head cannot be held in the erect position. The limbs are exceedingly thin and emaciated. They appear to be atrophied. Electrical

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stimulation does not show R. D., but only a diminution of response to faradism and galvanism. There is no deformity of the feet or hands. The child can grasp objects, but she cannot keep them long, as they soon fall out of her hands. The voluntary movements of the legs are exceedingly limited. On stimulation the legs would only slightly extend forward. The patellar tendon reflexes are markedly diminished and at times not obtainable. The Achilles tendon reflex is absent on both sides. The biceps and triceps reflexes in the upper extremities are not always obtainable, and when positive are very feeble. The abdominal reflex is present. The toe phenomenon is absent. The sensations are normal and the sphincters present no abnormality. The cranium is symmetrical. The eyes are normal. The child does not talk, but is apparently interested in the surroundings. She recognizes her mother and sisters, but shows no initiative. The Wassermann test was negative. In spite of the negative test, iodides were administered in rapidly increasing doses and massage, hydrotherapy, and hygienic measures were persistently applied. The patient improved somewhat, but not as rapidly as the first patient. At present, however, she can be kept in a sitting posture for a few minutes without becoming curved.

THE PREVENTION AND SURGICAL TREATMENT OF CANCER.*

By JOHN A. McGLINN, A.B., M.D.,

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(*Concluded from the March issue.*)

The *mammary gland* is very prone to cancerous disease, and on account of its position it is readily accessible for examination and more or less correct diagnosis. Here is a field in which, on account of the ease of early diagnosis, the surgical treatment of cancer gives a fairly satisfactory result. But the best of statistics in this condition are not such as should leave us satisfied with the early recognition and surgical cure of the disease. All cases of cancer of the breast are preceded by a *precancerous state,* such as benign adenomata, abnormal involution, Paget's disease, etc., removal of which would yield a much larger percentage of cures than any treatment of cancer ever devised. While, in removing benign tumors of the breast, I believe it good surgery to apply one of the conservative operations such as the Warren, with careful laboratory examination of the tumor removed, I would strongly advise against any attempt at conservatism in breast tumors in women at or near the cancer age or in the presence of tumors which are in any way suspicious. It is important to urge the constant observation of those cases in which, according to the pathological report, the growth is benign. I have the greatest respect for the laboratory, but it is often impossible for the pathologist to find a malignant change in an apparently benign tumor. A positive labora-

* Read before the Mt. Carmel, Pa., Medical Club and the Lackawanna County Medical Society.

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tory report is always of positive value; a benign report is not always of positive value.

In a paper recently read before the State Society I showed, as had already been observed by others, that in practically all cases of *cancer of the gall-bladder* and *biliary passages* gall-stones or chronic inflammation were present. It is accepted by practically all observers that gall-stones play an important part in the etiology of primary cancer of these organs. In view of the production of cancer and other definite lesions of these and other structures as a result of gall-stones I drew the following conclusions: "As to treatment I believe that gall-stone disease is practically always a surgical condition. Non-surgical measures may for the time relieve the symptoms and in the early stages cure the inflammatory complications, and may even cause the removal of some of the stones; but the only way to cure gall-stone disease is to remove the stones surgically, and at the same time cure the cause of the gall-stones as well by establishing drainage to cure the inflammatory lesions."

Charles J. Mayo states:[1] "Patients with *thyroid* tumors who require operation prove that chronic irritation of an adenoma may cause *carcinoma* in about 1 in 25 or 30 cases. A rapidly growing hard goiter should be looked on as a menace and early operation advised."

Cancer of the prostate is a comparatively common condition, and the operation for its relief is both dangerous and unsatisfactory. It is known that this gland is very likely to undergo hypertrophy and hyperplasia at certain ages, and it is further known that these apparently benign changes frequently lead to cancer. In the past it has been the indication to operate only when these benign changes led to marked symptoms. In the light of our present knowledge, the possibility of cancerous degeneration occurring should be taken into consideration in deciding the question of operation. It is undoubtedly a fact that the operation can be done much more safely when the patient still has good resisting power and before there is bladder and kidney involvement than after waiting as we have in the past.

Cancer of the urinary bladder is almost always dependent on a benign papilloma, removal of which while it is still benign would prevent the development of many of these cases.

If there is any one location of cancer more than others which proves chronic irritation and a precancerous condition to be etiologic factors it is the *skin*. Here we find the elevated moles and warts, and the nevi and various pigmentations which in so many cases take on malignant changes as the patient advances in years. Here also we have the skin cancers developing in tar-workers, workers in paraffin and oil, as well as the chimneysweep cancer and the cancer in the natives of Kashmir, as already noted. Again, there are the cancers developing as the result of constant irritation from certain rays of light, as seen in X-ray workers. Surely no one can doubt the clinical manifestations as here presented. What folly it is to allow a person to carry with him to the cancer age these lesions which are so apt to undergo malignant

[1] Jour. Amer. Med. Assoc., Nov. 5, 1910.

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change! Is it not the humane as well as the rational thing to advise the removal of these potentially dangerous conditions while they are still benign, and all the more since this can be accomplished without risk to the patients and at the same time improve their personal appearance?

Cancer Prophylaxis.

Enough had been said in pointing out certain precancerous lesions and the advisability of their cure: The serious question next to be considered is the application of these principles. All the methods for the propagation of the truths in reference to cancer have met with the same objection. It is admitted that the medical man alone can accomplish but little. Unless a direct appeal is made to the public and the truths explained to them they will not present themselves to the physician until the disease has advanced so far as to be well-nigh hopeless. Here, again, an objection arises in that a popular campaign to the laity would produce a state of cancerphobia which in its results would be as bad as the disease itself. This idea is so fixed in the minds of many physicians that they will never tell a patient that she has cancer. Of course, this is the humane and proper procedure in those cases which are hopeless, but I doubt the wisdom of the advice in cases that are still operable, and I am sure it is indefensible in cases that are still in the precancerous stage. I do not mean that it is always necessary to tell a patient the truth in these matters. If a patient will follow the advice given and submit to the proper treatment, there is no need of raising the question in the minds of the patients and having them worried for the rest of their days. But to those patients who make light of the condition and will not accept advice promptly the full truth should be told, as it is only in this way that they can be made to realize the seriousness of their condition and to seek proper and prompt aid for its cure.

As to the question of the education of the public in relation to cancer truths I do not believe, personally, that there is any need to consider the question of cancerphobia. No one can question the advantages of education of the public in relation to tuberculosis and appendicitis, and I can see no valid reason why cancer should not have the same consideration as these two diseases. That the education of the public in reference to cancer will bear fruit and be free from evil consequences has been amply proven in Germany, where as the result of Winter's educational movement the number of cases of cancer of the cervix coming to treatment while still in the operable stage has increased by 80 per cent. since the beginning of his campaign.

It is too much to hope that both the profession and public will fully grasp the importance of this dictum no matter how earnestly the campaign of education is waged, and we will still have cases of cancer to treat. So many new ideas in reference to the treatment of cancer are now in vogue that it is essential for us briefly to consider this phase of the subject. This is especially important because so many ill-advised articles on treatment, based on experimental studies, have lately appeared in the public press. While I am a

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firm believer in the efficacy of the press in the dissemination of medical knowledge to the laity, it is my opinion that strenuous efforts should be made by the organized profession to have all special articles edited by a competent physician before publication. An article appeared some time ago in reference to the Ehrlich-Wassermann treatment, written in a popular style, which was most misleading. It would encourage a person afflicted with cancer to refuse proper surgical or other well-established treatment, and to demand a treatment which is not at the present time either proven or available.

Treatment of Cancer.

Let us consider briefly the accepted views on the treatment of this condition. Any treatment to be curative must either remove or destroy all the cancer present. The best method, that which has the largest field of usefulness, is undoubtedly the surgical. Other methods, such as the X-rays, radium, and pastes, while efficacious in destroying cancer tissue, certainly have a limited field. Except for superficial cancers of the skin we would hardly be justified in using any of these measures in any other site while the disease was still in an operable condition. I do not underestimate their value in the inoperable cases nor their beneficent results both before and after surgical intervention. In fact, I believe that every case of cancer operated on should have a course of X-ray treatment after operation, and that all cases operated on, where the site will lend itself to the treatment, should have the benefit of fulguration.

While many novel modes of treatment have recently been advocated, *e.g.*, injections of various serums or juices and the use of chemicals which have a selective action on the cancer cells, their actions and limitations are so little understood that they should at the present time be reserved for the inoperable and apparently hopeless cases exclusively. The investigations in the field of cancer etiology and therapy are so numerous and thorough that I believe we must be on the threshold of important discoveries, which will solve the riddle of the cause and give us a specific treatment for the cure. The most promising efforts are those of Wassermann in the line of chemotherapy. Wassermann has found that injections of negrosin and of eosin and selenium compound, when injected into mice with cancers, cause the cancer to disappear without in any way affecting the normal body cells. As far as I know, these experiments have not been tried out on human beings, and we will have to wait until a sufficient time has elapsed definitely to assert their efficacy. We have seen the wonderful results attributed to the fluid of Hodenpyl, the serum of Coca, and the various embryonic emulsions pass practically into oblivion as the result of the test of time. Surgery and the destructive agents alone have stood the test, and our results, poor as they may be in the general run of cases, are better than those obtained by any other method.

Surgical treatment, to be of any benefit, must be applied while the disease is still a local condition. If metastases have occurred, unless they are localized in an area whence they can be safely and thoroughly removed, surgery,

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except as an adjunct to the X-rays, radium, or fulguration, is not only useless, but unjustifiable.

The tendency in the surgical treatment of cancer has been to extend the field of operation and to make the operation more radical. This I believe to be based on sound pathological knowledge. It may be that some will object to this tendency on the basis that the operation is more dangerous and consequently the mortality too high in proportion to the amount of good such procedures will accomplish. In some fields I think this is a valid objection; for instance, in the modern operation for cancer of the cervix uteri. Wertheim advocates an operation, based on the same general principles as that for cancer of the breast, in which not only the entire uterus is removed, but all the pelvic and retroperitoneal glands extending up as high as the bifurcation of the common iliac. This operation is so extensive that the operative mortality must remain high, except in the hands of the exceptionally gifted operator. At the same time, if the disease has advanced to the stage where there is glandular involvement, we can hardly hope by any operative procedure to remove all the affected tissue. As far as comparative statistics are concerned the old operation of high amputation of the cervix as advocated by Byrne many years ago gives as good results as the modern Wertheim operation, and has the advantage of being free of operative risk. My own feeling in reference to operable cancer of the cervix is that, if the disease is of the squamous-cell variety and is limited to the vaginal portion of the cervix, a high amputation will give satisfactory results. If the disease, however, happens to be of the adenomatous type, it is better to do a hysterectomy, for the reason that we are almost sure to have some extension upward in the endometrium of the body of the uterus.

In cancer of the breast, on the other hand, I believe that we cannot make the operation too radical. Here, no matter how extensive the operation may be, it can be done with practically no mortality. In this connection we have to fear neither operative mortality nor postoperative invalidism.

Cancer of the stomach, if seen early, offers a promising field for surgical treatment. It has been the general belief that all that can be hoped for from surgery in this condition is some palliation, *i.e.*, the relief of symptoms. Even if surgical measures offered nothing more than this their employment would be justified. They offer more than this, however. The Mayos have shown that by radical operation about 19 per cent. of their cases of early cancer of the stomach are cured for a three-year period. The radical operation, to be effective, must be done while the disease is limited to the stomach, and before there are more than mere local metastases. Once the adjacent organs are involved, the case is hopeless.

Cancer of the lip is another promising field, provided the operation is properly done. The mere excision of the cancer area is worse than useless. In every case of cancer of the lip, in addition to removing all the affected area, a block dissection of the neck should be done at the same time. Wonderful in their action as they are, the X-rays should not be used to the exclusion of surgery. After the glands have been removed they may be applied,

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but not before, unless the glandular involvement is so great as to prohibit its surgical removal.

In skin cancers of the face, while surgical treatment has a place, I am free to admit that desiccation, fulguration, and the X-rays are just as efficient as to cure, and as to cosmetic results perhaps infinitely superior.

Cancer of the penis or vulva always calls for removal of the glands of the groin as well as of the original growth.

We might go on discussing the surgical indications and limitations in other situations, but enough has been said, I think, to establish the general principles upon which we must work. While I will not burden you with statistics in reference to the possibility of curing cancer in certain situations, I think it well to emphasize the fact that cancer is not altogether an incurable disease. Of course, it is true that the proportion of cases cured is comparatively small, and that many of the cases supposedly cured will show a recurrence of the disease later on. On the other hand, without some form of radical treatment the disease will have a mortality of 100 per cent., and lead to a death which, though rapid, is not rapid enough, and meanwhile involves misery of both mind and body that is sad to contemplate. If we can prolong life with freedom from pain and suffering for a period of years, and moreover can cure a certain proportion of cases, surely we are not justified in denying the poor sufferers the means we have at hand to accomplish this result. If we will only recognize the precancerous conditions and treat them promptly and properly, we can prevent many cases of cancer; and if we will recognize the disease in its incipiency and apply proper treatment, we can render our knowledge in this direction well worth the while.

MINE SANITATION.

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Mine sanitation calls for the application of the laws of sanitation to a special industry in which the conditions under which the majority of the men labor are as far different from open-air work as in any occupation. The conclusions reached in this paper will vary in some minor details from those generally accepted for mines in the colder countries.

To understand that which is necessary to render a coal mine safe and sanitary for the workmen and animals employed requires a study of mine engineering and a well-grounded knowledge of the chemistry, physics, and physiological action of the gases encountered. The fact should, of course, always be kept in mind that, to be successful, methods used must not interfere with the practical economic operation of the mine.

Ventilation.—In ventilating a coal mine we not only have to deal with the problem of supplying the workers with a good respirable air at a con-

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siderable distance from the supply, but we encounter a number of gases which are dangerous to life if breathed, and are also a source of constant danger from their explosiveness, when present in the proper proportions. In planning the ventilation of a school, factory, or other building we can figure with some accuracy as to the amount of air required per hour for each individual worker. Thus, from the physiologists we receive the following easy if not very accurate formula: a man resting takes into the lungs at each respiration 7 c.c. of air for each kilogram of body weight; this gives roughly, in the English measure, 28 cu. ft. as the amount actually necessary for the average man per hour doing ordinary work. Unfortunately, this has been the basis of most of the legislation in the United States and several other countries regarding the air supply in mines, the law calling for a definite minimum number of cubic feet of air per hour per man and beast employed. In one case this minimum may be far in excess of the amount needed, while it may easily be true that a neighboring mine may be improperly supplied even though the maximum required by law is furnished. An explosion may take place as a result of this insufficiency and the company will be entirely blameless at law, even if they knew the amount of air supplied was insufficient. Fortunately, the cost of carelessness falls on the operator when those terrible mine explosions occur; accordingly, we find the men in charge trying at all times to keep their air supply so good that gas may never accumulate to cause a disastrous explosion. English mining laws are of the best; at present the laws in that country as to air supply for collieries read in part as follows: "All coal mines shall be so supplied with fresh air that inflammable, explosive, or injurious gases are so diluted as to be rendered harmless." The rigid enforcement of such a law not only greatly reduces the chance of an explosion, but also gives the men a very adequate supply of pure, respirable air.

Gases Met in Coal Mines.—Four gases are met with in practically all collieries. All are carbon compounds but one, which is the one least frequently causing serious trouble. They are CH_4, methane, or marsh gas, which when mixed with the oxygen of the air becomes the dreaded "fire-damp," the most explosive gas encountered in mines; CO, carbon monoxide, or "white-damp"; CO_2, carbon dioxide, carbonic acid gas, "black-" or "choke- damp," and H_2S, hydrogen sulphide, or "stink-damp."

CH_4, methane, a colorless, odorless, tasteless gas, lighter than air, in a pure state burns with a blue flame. It is very explosive when mixed with air in proportions of from 1 to 5 to 1 to 15 (the range of explosiveness generally given), between 1 to 7 and 1 to 9 being the most dangerous mixtures. From 2 to 4 per cent. of methane in the air will burn quietly, making a blue cap on the flame of a safety or gas lamp.

Methane is found in practically all coal mines, the gas being confined in pockets above and below the coal seam, between the coal and an impervious stratum. As the coal is mined the gas, which is under high pressure, is driven out into the workings through cracks or fissures in the coal; these fissures often connect with large pockets, the gas escaping with an audible blowing sound, whence mining men speak of them as "blowers." Again, there may

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be no fissures, the force of the confined gas blowing in considerable portions of the wall weakened by the diggers. All coal mines contain considerable quantities of this gas, which is given off slowly as the coal disintegrates. The amount thus given off, however, is so small that practically it can be disregarded in the ventilation scheme. New workings are more gaseous than older ones, the pockets of gas being exhausted and fewer new ones encountered as the work progresses. Methane may be breathed in large quantities by the workers, as long as the percentage of oxygen does not fall, with no harmful effects on the economy. When methane is breathed in its pure state, the effect is not unlike that of "laughing gas"; the subject feels his head expanding until it seems to burst, an agreeable general sensation being meanwhile experienced, and he will drop on the ground. If the victim be taken into a good atmosphere recovery is quite prompt, and no bad after-effects are witnessed; if left in the gas, however, he dies from suffocation.

Any sudden change in external atmospheric conditions will cause a change in the amount of gas that pours into the mine, according to the well-known laws concerning the expansion and contraction of gases. The gas man should be instructed in barometric readings, which he should take and record every eight hours. Any sudden barometric change should at once be reported to the superintendent, that the fan may be adjusted accordingly. This is especially important where the pure air supplied is not considerably in excess of the safe amount, as a change in air pressure will mean that more or less gas will diffuse through the mine. In conjunction with the barometric readings temperature records should be carefully kept, though they are not as essential as the former.

CO, white-damp, or carbon monoxide, is a colorless, odorless, tasteless gas, lighter than air, combustible, and explosive when mixed with air. The proportions for an explosive mixture are 1 to 7 to 30, 1 to 12 to 17 being considered most dangerously explosive. This gas is only detectable by the expert. The light will burn a little more brightly, but gives no cap. A few men can detect small amounts of the gas by a peculiar prickling sensation at back of the mouth, but the majority do not notice it until they begin to feel the physiological effects, when it may be too late to escape.

Carbon monoxide occurs in lignites, but is not one of the gaseous constituents of steam, bituminous, or anthracite coals. In mines of these coals the gas is formed by rapid, incomplete disintegration of the coal, as in the presence of a mine fire or after an explosion. Unlike methane, carbon monoxide is very poisonous to animal life. One per cent., if breathed for any length of time, will produce all the characteristic symptoms, viz.; a marked shortness of breath on slight exertion, followed by a splitting headache. The headache may be preceded by sudden loss of sight or complete paralysis of the lower limbs. It is rare for a man to lose the power of his arms before becoming completely unconscious. The effects of this gas are independent of the oxygen content of the air, as carbon monoxide forms a more stable compound with the hemoglobin of the red blood-cells than oxygen does itself. The time during which, after a man falls unconscious from the effects of the

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gas, he can be resuscitated in a pure atmosphere is very short; even when he lives the effects of the poison may be so marked that mentality is partially or wholly destroyed. Several such cases have come under my personal observation.

One particular instance was that of a healthy Scottish lad who was overcome in rescue work after an explosion. For a week he was in a very serious condition, being completely delirious. The delirium left him in a state of profound melancholia; he showed no interest in life for some days, though his physical condition improved markedly. For weeks he went about like an automaton. If addressed directly he would respond for a moment or two, only to lapse into an obstinate, expressionless silence. He was sent on a long trip, where he had complete change of scene and people. He was intentionally sent alone, against the advice of an older physician, but at the urgent request of his brother, a man of wide experience in coal-mine disasters, but not a physician. After three months he returned in a nearly normal condition, though it was months before be could do much work in the mine without a return of the despondency, which had been entirely foreign to him before his mishap. Other cases never regained their mentality. Several improved so as to be self-supporting and reliable workers in the open; but inside work or exposure to very small amounts of gas would upset them for days. Some milder cases developed such a fear of the pit that they never could return to underground work.

The most effective way of guarding the men from this gas in lignite mines or in mines where fires are not infrequent is by keeping some small animals in the mine, such as white mice, which will be killed by an amount of gas that will not injure the men. For such a scheme to be successful the mice, after a week in the mine, must be given a week in the open; otherwise they may become immune to small percentages of the gas. After a fire or explosion the rescue party should carry some such small animal with them unless they go in with their helmets on, when it is unnecessary. The appearance of those dying from the gas is characteristic. For several hours the face remains very lifelike, with a bright color in the cheeks; later the eyes protrude and the mouth hangs open in a gruesome manner.

CO_2, carbonic acid gas, is a colorless, odorless, tasteless gas, heavier than air and a non-supporter of combustion. This gas is set free through the disintegration of the coal and timbers in mines as well as by men, animals, and lights. The amount liberated through disintegration is usually far in excess of that given off by men and their lights. The gas is easily detected if present in deleterious amounts by the dimness of the lamp. Like carbon monoxide this gas forms a compound with the hemoglobin of the red blood-cells, and acts as a poison to the higher centers of the nervous system. In a closed room the effects are noticeable from 0.5 per cent., but in the mine, with the fan working, the air is rarely stagnant, and the men do not show ill effects until the percentage is considerably higher—from 1 per cent. to 1.5 per cent.

At first the heart's action is increased by carbon dioxide; later it becomes slower and fuller. There is a sense of hebetude, with perhaps a dull

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headache, when the symptoms come on slowly. If the dose is overpowering, the patient may fall unconscious without even a cry, not knowing that anything was wrong. Recovery when the victim is brought out to a good atmosphere is usually more prompt than from carbon monoxide. The men can lie in the gas for one or more hours if there is a sufficiency of oxygen and still be resuscitated. There may be some bad after-effects, but they are usually of short duration and not serious. Suffocation ensues when there is 1 volume of this gas to 12 volumes of air.

H_2S, stink-damp, occurs rarely, but is very poisonous. Its odor is so marked, however, that it is quickly detected. It is formed by the action of water on iron pyrites.

Several of the higher hydrocarbons have been reported; nearly all mines show one or more in an exhaustive air analysis, but they are present in such minute quantities as to be negligible in so far as is now known. The mixture of gases present after an explosion is generally spoken of as "after-damp."

In nearly all collieries some form of nitro powder is used for blasting out the coal. All the nitro powders leave gases that are poisonous under any condition. If the heart is weak the results may be serious, where to a healthy person they would be negligible. In all well-regulated mines no blasting is permitted except when the men are out of the mines, and all of it is to be done by the gas man or powder man. The best powder is one of low thermal point on explosion, *i.e.*, one with a small flashing tendency.

In some coals the water cartridge is very effective, and it is without danger. Unfortunately, this will give workable economic results in but few of the harder coals.

Practical Considerations.—From the facts just presented the necessity of getting good air to the workmen and of effecting the removal of certain poisonous and obnoxious gases will be realized. Methane is formed most rapidly at the face of the main entries, which are usually farthest from the intake. The air currents must reach these points with sufficient force to sweep out this and other gases.

Methane rises rapidly to fill any irregularities in the roof, where it mixes slowly with the air, until a most explosive mixture is formed. Even at best, these pockets may form with the largest supply of air that can safely be used. Experience has taught us, indeed, that too strong a current of air on the main entries up and down which the men go to and from work is very deleterious to health. The men coming from the rooms are usually hot and in a perspiration, and the strong air current cools them so quickly that many cases of illness have been ascribed to this, with reason.

To obviate this difficulty, ventilating by means of "splits" is the best plan. By this method the full force of air current can be directed to the points where gas is accumulating and this gas swept out. The great danger of such a system lies in too many divisions, and it has to be made a general rule never to split a secondary split. A very careful arrangement and supervision of the doors and stoppings is also required.

In a series of readings of the air analysis from several mines in two dis-

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tinct coal basins in Coahuila, Mexico, the coal varying from a very soft bituminous to a fair grade of steam and approaching lignite near the surface working, we found a rather high carbon dioxide content and considerable methane, but on the whole the readings compared favorably with those from Scottish and English mines. The mines were new, however, and comparatively small. What the readings would be if the work extended as it should does not seem very encouraging, as the oxygen was found several parts lower in not very distant workings, although the carbon dioxide was not excessive. Carbon monoxide was found only in traces, and that in abandoned workings.

Highest CO_2, 1.2 per cent., found in underground stable and disused working.
Highest CO_2 at face of main entry (slope) 0.7 per cent., average 0.4 per cent.
Highest CH_4 in used workings..... 2.3 per cent., average 0.5 per cent.
Oxygen, lowest, in used workings.....18.0 per cent., average 19.5 per cent.
Oxygen, lowest reading at hand.....17.0 per cent.

In deciding how best to ventilate there are many things to be considered, *e.g.*, the depth of the coal, the thickness of the seam, the probable extent of the workings, the possible amount of gas and water to be dealt with, the nature of the roof, etc. With these comes the question as to what method shall be used to supply the air, whether the force or exhaust fan, the waterfall method, steam or furnace, or, simplest of all, the difference in levels of the in-by and out-by shafts. As sanitarians we are not interested, however, in what method is used to ventilate, but rather in whether the system employed is adequate to supply a good respirable air to all workers and remove the dangerous and poisonous gases.

The velocity of the air depends largely on the size and shape of the air courses. A circular shaft is best, but in practice this is not available. In ordinary mining operations, the form most generally met is as nearly square as is practicable. The most satisfactory entries from a sanitary view are bricked or concreted, leaving a fairly smooth surface, which should be frequently whitewashed. Again, we run into the expense side, for but few mines are of sufficient extent to warrant the expense of such entries. Straight entries offer less resistance in friction to the air; this has been sadly neglected in many mines, as the entries have been driven along the lines of least resistance, with the result of making them tortuous where in many instances a very slight increase in the original cost would have given a straight, even-bored entry.

From the sanitary standpoint the double reversible fan system of supplying air is to be recommended. The times when a reversal of the air current becomes necessary are very rare; it is a serious step to take and should never be taken except by the superintendent, who has a full knowledge of the air ways of the mine. Particularly in the case of the force fan is the fan likely to be crippled after an explosion, when, if there is not an auxiliary, the loss of life through not being able to start at once is greater than it would be otherwise.

The greatest attention must be paid to all crosscuts and communications between the return and the main in-by air ways. These should be regularly

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inspected by the gas man to see that no leaks occur, as a leak between the main in-by and out-by air may cause great loss of life. With a small fire on the main entry, if that be also the in-by air way, such loss of life will occur even as the result of a small explosion. We have had this vividly shown by such disasters as that at Cherry Hill and a great French disaster. Frequent tests of the air in the various parts of the mine should be made and the records kept for comparison, for it is only by some such system that one can tell accurately whether or not the air supply is adequate. These tests also show where the methane is being set free. The ordinary man will fail to detect less than 2 per cent. of that gas. Particularly is the analysis valuable where carbon monoxide is met, as this gas is not easily detected in any other manner.

In warm countries the temperature of the air is a consideration. Drill holes show practically the same temperature in all countries from 60 feet down (60° F. at 60 feet and 1° increase for every 60 feet of depth), but where the in-by air is at a temperature exceeding 100° F. greater care should be taken to reduce friction in all ways. Temperature readings from Mexican mines showed room temperatures of 90° to 95° F. In the drier mines this did not seem to cause any great discomfort to the men, but in the wet mines they suffered markedly. That this temperature can be reduced by a little care and at no added expense was shown at Conquista by Ogilvie, who reduced the room temperatures from 5 to 10° by study and alteration of the air courses.

Drainage.—As with ventilation, we have in mine drainage a great problem in itself, and one that comes under the scope of the sanitarian. The nature of the mine, its depth, the pitch of the seam being worked, and the source of the water are problems to be met by the engineer, but we should insist that the water be taken care of in such a manner as to render it of as little detriment to the workers as possible. In shaft workings the streams cut in sinking the shaft should be so taken care of as to prevent any water from falling on the cages, and the cages themselves so covered that the men may go up and down dry. Often little care is taken of small feeders that are tapped by the entries, except that the water may eventually find its way to a sump, the water being allowed to run as it lists and often spreading over the entire roadway so that it is impossible for the men to reach their working place dry shod; they are thus left with their day's work before them with boots soaked. This not only causes trouble from sore feet, which alone may incapacitate the worker, but renders them more susceptible to injury from the electric wiring, if electricity be used in the mine, and also exposes them to danger from the possibility that the water may carry hookworm larvæ.

The entries should all be ditched sufficiently to carry off the water without flooding the roadway in any place, or the water led down an air way through which the men are not obliged to pass in going to and from their work. The ditches should be kept free of *débris* and should be of sufficient size to convey all the water that can reasonably be expected. Pools should be avoided as much as possible, as stagnant water in the mines means a suit-

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able place for the development of any hookworm eggs that may be brought in or near it, whereas, according to the best opinion, there is comparatively little danger of any extensive infection in running water. The sump or sumps into which the general mine drainage goes should be guarded as far as possible from infection. The water from them should never be used for sprinkling or other purposes in the mine, but should be discharged into a rather shallow, open ditch, which should be kept as clean of muck and slime as possible. When the in-by air is very hot greater care is necessary in making the air ways large and free from unnecessary friction, as a high temperature in a humid atmosphere is very trying to the workers.

DUST.—All mines are more or less filled with the coal dust which arises from working or transporting the coal. There appears to be no reason to suppose that this dust is any more hurtful to the tissues of the respiratory tract than any other dust, but, as we all know that any dust is harmful, it must be prevented in so far as is possible. Much can be done to prevent dust by care in blasting, care in loading, the employment of tight pit-cars, and the care of trackage and haulage. Where the mine is dusty in spite of these precautions, sprinkling should be advocated. The objection to sprinkling is the spread of hookworm disease, an unfounded objection, as I believe and shall try to prove in discussing the affection.

If the dust of a colliery is not dangerous to health, it is at least a very grave menace to life and property because of its explosiveness. Some good authorities consider it more dangerous than fire-damp. It has been exploded by open lamps, matches, blasts, and electric sparks.

LIGHTS.—Open lights are to be condemned for several reasons, and should never be permitted in a coal mine. First, there is the danger of causing an explosion; second, that of starting fires; third, the smoke from them is obnoxious and damaging to the respiratory tract; fourth, they increase the temperature of the rooms. The one good point in their favor is that in a mine with a bad roof fewer men are injured by falling rocks. The best lamp, theoretically, is one of the electric head lamps; but practically, in so far as I have seen them tried, they have not proven satisfactory. One is obliged to adopt, therefore, some form of the so-called "safety lamp." Of this there are many different models to choose from. What is to be desired is that lamp which will give the best light with the least heat and danger of igniting any fire-damp, dust, or other explosive. These lamps must be filled and cleaned by one man and given by him to the miners as they go into the pit; all must be locked in some way so that the men cannot open them and expose the naked flame while in the pit. If an electric head lamp is perfected the necessity of gas lamps will not be wholly obviated, as the safety lamp indicates CO_2 and CH_4 if they are present in dangerous quantities, and will give the worker warning of their increase so that he may get out of the pit before being overcome.

POWER.—As electric power is becoming cheaper it is more and more used in mines. This does not concern us as sanitarians except in the broader sense of guarding the men from injury. No mine is absolutely dry; the

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wiring for high-tension currents must therefore be very carefully done. The feed wires should never be allowed in the main entries generally used by the men in going to and from their work. Men have been killed by such wires even though insulated. Men have been reported as badly shocked from striking a nail in the timber to which the wires were attached. All switch boxes should be dust and flame proof; according to the experience had so far cartridge fuses would appear to be the best. Thornton and Bowden proved conclusively that an electric flash would explode coal dust; they found the direct inductive current the most dangerous and the alternating current safest. The higher the voltage, the lower the safe ampèrage. In view of Thornton's and Bowden's findings it would seem very unsafe to permit electric haulage motors in a dusty or gaseous mine.

UNDERGROUND STABLES.—As yet nothing has proven as effective for haulage in many mines as mules or horses. Where the workings are extensive or deep it is not practicable to bring the animals out after each day's work, and stables within the mine accordingly become a necessity. The stable should be so placed that the return air will pass directly to the main return. The stable should slope toward the sump, and be connected directly with the latter by a concreted drain, so that it may be washed thoroughly. The walls should be whitewashed monthly, or more frequently if necessary. Where an electric current is available the stable should be lighted by electric globes; ordinary stable lanterns must never be permitted because of the danger of fire and explosion. The stalls should be floored with heavy, narrow planking, leaving narrow spaces between the planks, and with the planking long enough for the animal to lie at ease but not so long that the manure will not fall beyond the planking. A shallow ditch should run behind each stall, ending in the sump drain. This ditch should be concreted to render cleansing more easy and prevent the retention of strong odors. All manure should be placed in covered cars to be sent to the surface for disposal. The animals, to be efficient, require better attention underground, especially in feeding. The ration should be sent in daily, only enough being kept underground to tide over any delay that might arise from injury to the hoisting apparatus, as hay and grain spoil very rapidly in mine atmosphere and the animals will quickly show the effects of poor feed.

FIRST AID AND RESCUE WORK.—This, while in general not coming under the scope of the sanitarian, does in the ordinary coal camp, all being under the charge of the surgeon. Here again we find the European countries much more advanced in their laws than the United States, while Mexico, on the other hand, is suffering from an utter lack of legislation both in sanitation and accident prevention. The majority of the European mine laws require all men who wish to qualify for a pit or mine-boss job to pass an examination in first aid and rescue work as well as in the technicalities of mine work. These examinations cover the regular first-aid work, including artificial respiration, bandaging, and arresting hemorrhage, and also demand special knowledge concerning the manner of getting the injured out of a wrecked mine after an explosion or other disaster. The train workers are taught,

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furthermore, the use of some kind of apparatus for places where there are irrespirable gases. Our pits were each supplied with an emergency box containing carbolated vaselin, bandages, gauze, 50 per cent. alcohol, absorbent cotton, a mixture of alcohol, camphor, and chloroform, aromatic spirits of ammonia, and bichloride of mercury in 7½-grain tablets. We had no room close to the pit for emergency work, as should be provided by all companies unless there be a hospital building near. Few companies are large enough to afford the expensive apparatus of a well-appointed rescue party. In place of that, we have the State rescue stations, with their branch stations, rescue cars, etc., which are doing a great work. But no mine is too small to afford at least a couple of outfits and secure the training of three or four men in their use, so that there may be a couple of men on hand to enter the irrespirable gases at once after an explosion or in the presence of fire; prompt action by one familiar with the mine may mean a great saving of life. The form of apparatus used does not matter to the sanitarian; both the helmet and the breathing mask have strong advocates. Nearly all forms use compressed oxygen. The pneumatogen uses a solid chemical, but as yet no suitable method of cooling the air has been devised. One apparatus weighs 10 to 15 pounds, the others 40 pounds or more. All will supply oxygen for two hours with the user at heavy work.

Personal Hygiene.—The home life of miners will not be dealt with except in so far as it may seem to have a more or less direct effect on them in their work. No more care is necessary in choosing the men for the ordinary mine work than for shop work, as the atmospheric conditions are the same; but it is a dirty, dangerous occupation, and the work does not call for a very high class of labor, but rather an ignorant, reckless crew that holds life cheap. Always, with such a class, anything that means a bit more bother or care meets with opposition on general principles. To gain the co-operation of these workers a painstaking explanation is necessary; like all men of their type, they have many superstitions, customs, and habits that have come down from father to son, and interference with these in any way will arouse a blind, unreasoning opposition. Unskilled or, better, inexperienced labor in the pit is paid about 25 per cent. more than the same labor outside, while a good digger is usually able to earn the wage of the average skilled laborer in the smaller communities. As a result the average miner does not work more than five days a week. He lives recklessly, saving little, and drinking heavily when he has the money.

Dress.—This is an item of much more importance than most persons would imagine. In a gaseous mine the very fact that a man is working, as do the majority of Mexican miners, wearing only a breech clout may cost him his life, as not infrequently a small pocket of gas is fired, burning fatally the man who fired it. Had the man been wearing a woolen shirt he would have sustained only a painful burn of the exposed skin; hence all men working in gaseous mines should be required to wear shirts and trousers while in the pit. Cotton shirts, if clean, are satisfactory; but if dirty and dry they are very inflammable.

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In mines where the hookworm is prevalent, great care should be taken of the feet, as it seems a well-proven fact that in the majority of cases infection occurs through the feet. A shoe should be worn like that used largely in France, consisting of a wooden sole with a leather upper. The upper should be kept well oiled, so as to be soft and as nearly waterproof as possible.

The Mexican miner usually works in sandals or on his bare feet, and is thus exposed to the hookworm if it be present, as well as to increased danger in mines where electricity is used to operate the mine pumps and other underground machinery. During the winter months in Mexico the miners suffer a great deal from chapped feet, a condition locally known as "bronce," which gets so bad at times as to incapacitate the men from work for a week at a time. All this can be avoided if the men will take a little trouble to wash their feet on coming from the pit and use some kind of ointment.

BATHS.—A suitable bath and dressing house should be built near the pit mouth, so that the men may bathe and change immediately on coming from the pit. In this house there should be a locker with the ointment necessary for the care of the feet. That compulsory bathing would prove ineffective at first is indubitable, as even in England the requirement of a bath on coming from the pit was found to arouse so much opposition as to make it seem unwise to push the matter further.

The bath best adapted to this work is the shower. More baths can be placed in a small space, and they can be more easily cleaned and kept in a sanitary condition than in the case of the tub bath. The bath should be thoroughly cleaned daily and disinfected once a week, or more frequently where hookworm disease is prevalent. The men are to furnish their own towels and soap. The emergency room should be in the bath or lamp house near the pit mouth. Where there is considerable rescue apparatus there should be a separate room for this. The best arrangement is to have the emergency and rescue rooms combined in one. In the emergency room there should be kept stretchers, emergency boxes, etc.

CARE OF HUMAN EXCRETA IN THE MINE.—Where hookworm disease and typhoid fever are prevalent this is the most serious question the sanitarians have to meet. Until very recently little attention has been paid to this side of the question. For years what has been called "mine sickness" has been reported from a number of mining sections. This condition was at first ascribed to bad air or some such cause, but rather recently it has been found to be due to hookworm infection. It is probably safe to conclude that the majority of the coal fields in the United States and Mexico are infected. A number of the metal mines have proven to be infected, and many more will probably be found so as the subject is given further careful study. Anyone acquainted with underground conditions in the average mine is aware of the many vile places that the men use for privies. No mine has been reported as being fitted with suitable latrines underground. In a few Scottish and English mines the men are required to visit the latrines before going in to their work, but such a system can never be fully satisfactory. The best system is some

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form of portable latrine. The most suitable arrangement would seem to be a set of heavy cans, with privy-seat covers which can be easily changed and replaced by tight, galvanized-iron covers. The cans should be light enough so that they can easily be taken to the surface for emptying and cleaning. The safe way of disposal is by the use of an incinerator. After being emptied the cans can be placed in a steam chest into which exhaust steam from the hoisting engine is passed. In this way they are thoroughly disinfected and if more cleaning is necessary it can safely be done. When the cans are dry and ready to be carried back to the mine, they can be dusted with chloride of lime. The cans should be changed at night or between shifts; two sets of cans should be available so that each used can may be replaced by a clean one.

If such a system is rigidly enforced from the start there should be no danger of infection of the mine with the hookworm, and foul, obnoxious spots in the mine will be avoided.

A study of the coal-mining conditions in Mexico shows a rather lower percentage of hookworm infection than would be expected in so warm a climate. This is explained by several factors. The average age of a Mexican coal mine is rather less than ten years. Moreover, the majority of the mines are comparatively dry, and the external conditions themselves are opposed to the spread of the infection. A few mines in the wet country show much hookworm infection, but as the majority of the Mexican mines lie in a high, dry belt there is little hookworm except in miners working in infected mines or from enganchos brought to the mine from the infected regions nearer the coasts. I never demonstrated a case of hookworm infection among the smaller children while in the coal district of Mexico, and never knew of such a case being reported.

The few wet mines, though new, show an alarming increase in mine sickness after the first year. None of the feeders are lined, nor are any other precautions taken to reduce the spread of the disease among the men. As yet neither the managers of the companies nor the government have taken any interest in the matter. Many of the cases are misleading to the surgeon in charge of the medical work, as the men recover from the anemia and other symptoms very quickly if they leave the mine to work in the open. Doubtless many of these cases are mild forms of hookworm infection which, going to new fields, may carry the disease if not detected and properly treated. To us it would seem wise to treat all cases of anemia among the mine workers as hookworm unless no ova are shown in repeated examination of the feces. As few mine surgeons can make such an examination, treatment is to be recommended in the majority on general principles.

German physicians have made quite an exhaustive study of the disease and its spread, especially in connection with sprinkling in dry mines. From their work it would seem that such natural conditions as pitch of seam, temperature, and crowding had much more influence on the spread of the disease than the mere fact as to whether sprinkling was carried on or not. These experiments were carried out in mines where all precautions were observed to prevent the spread of the disease among the men.

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From experiments in the Julia and Vonde Heydt mines we have the following figures: The sprinkling of the Julia was suspended for 1 year; at the same time active preventive measures were taken against the disease. The Vonde Heydt, as nearly similar in natural details as it is possible to find in two mines, was taken as control. The same active measures were applied in both mines, but sprinkling was continued in the Vonde Heydt. At the end of 1 year the Julia reported 1.47 per cent. of the men infected; after 18 months, 0.94 per cent,—a reduction of 19.52 per cent. The Vonde Heydt had 17.81 per cent. at start; after 12 months 2.15 per cent., and after 17 months 1.47 per cent. Two other mines in which active measures were taken showed, the one 3.2 per cent. after nearly 2 years, the other 0.22 per cent. In neither of these last mines did sprinkling ever play a part. It would seem, from these limited but thorough investigations, that sprinkling properly carried out does not alter the percentage of infection as much as the natural conditions of pitch, crowding, temperature, etc. If, as was done in one English mine, the infected sump water is used in sprinkling, a great and rapid increase is to be expected. It is from such circumstances as this that mining men have been led to take such a strong stand against the sprinkling of their mines.

That a sprinkler for the floor can be devised that will carry a disinfectant is unquestionable; thus carried out, sprinkling would be harmless. Even such sprinkling may not be adequate to render a mine free of the disease, as it has been shown that the hookworm larvæ will crawl up the wet mine timbers for many inches, and they would in this way escape any disinfectant that might be used in a floor sprinkler. Still, were a sprinkler with disinfectants used, a new infection, or much spread from an old one, would be very unlikely. In time it would render the mine free from the hookworm capable of infecting man, as the larvæ cannot exist very long (105 days at the most), and, with no new ones developing, the general floor space would be free.

Where wall sluicing is carried out it is rather difficult to use a disinfecting solution. Few mines can be sluiced because of the danger of the roof buckling and falling. Even if this could be done with disinfectants strong enough to kill hookworm larvæ, the sterilizing of the entire mine would be quite an expense, as well as a long and tedious operation.

The Germans recommend careful examination of the feces of all the workmen in the pit, isolation of those found infected, and treatment of the latter until they no longer show the ova in the feces. Such a scheme, while feasible in Germany, would I fear be very hard to carry out under the present conditions in our mining centers.

When large feeders are found that can be led to a separate sump without connecting in any way with the rest of the mine, there is available as a rule a most excellent water supply for drinking. The water requires no filtration or clarification and is practically a good spring water.

Aside from hookworm there is no serious disease that can be directly traced to conditions peculiar to mines, excepting, of course, where lead, arsenic, or some such poisonous metal is mined. One encounters, however, many severe cases of muscular rheumatism, especially lumbago, and certain affections of

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the eyes rarely if ever met with in other occupations, in dusty coal mines. Anthracosis is usually discovered at autopsy; it is rarely demonstrable before death.

As far as personal experience goes, the miner is as healthy as any worker of equal grade. His habits of life are such that certain diseases are very prevalent, but these have nothing to do with the conditions under which the men work. Death by accident in coal mining is very common; personal figures show one death by disease to two by accident, which is a very low figure for a Mexican coal field, even though covering but three years' time.

SUMMARY.—The study of mine sanitation falls under the following headings:—

1. Ventilation—the all-important subject upon which much study has been expended by mine engineers, but little if any by sanitarians; enough attention is not paid to the size and the conditions of the air ways, with their possibilities from the standpoint of reduction of friction; no regard is paid to humidity, and little to temperature.

2. Drainage, which has received no special sanitary mention in general mine engineering.

3. Disposal of excreta, which is fast beginning to arouse the interest of sanitarians at large, but as yet has not been applied to mining operations.

4. Personal hygiene of the men employed, which has received very little attention in the United States and none in Mexico.

5. Lighting, to which attention has been given through the study of explosions, but not as to its effect on the health of the men.

Much good work has been done in recent years in rescue work and first aid, but it seems to us that an improvement of the underground conditions along sanitary lines will call in a better, cleaner set of workers or improve those already engaged. As this improvement occurs, a less degree of reckless disregard for life will be shown, so that fewer accidents can reasonably be expected; danger will be more easily recognized and avoided. A move for bodily cleanliness will have its effect in the life of the workers outside the pit. In mining as in mill work, where common-sense ideas of health and safety protection are insisted upon, we shall secure more economical work, with better workmanship along all lines. No mine is agreeable to one unfamiliar with underground work, but with care and study nearly all can be rendered as sanitary as the best mill. As sanitation improves, the other operative risks will decrease somewhat, though mining will ever be classed as a hazardous occupation.

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THE INTERRELATION OF THE NERVOUS SYSTEM AND THE DUCTLESS GLANDS.

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It is rather generally accepted as a fact that whatever results are obtained by Christian scientists, faith curists, osteopathists, chiropractors, Zionists, and irregular practitioners everywhere, they are secured by each and all in much the same manner, that the curative factor is probably the same in each instance, allowing, of course, for such actual physical effects as may be had by some of these practitioners from alteration of the blood-supply and stimulation of nerve-tissues by rubbing and the use of external applications.

It is an expression commonly heard that "just the sight of Dr. So-and-so makes me feel better," and this is an indication that there is something besides drugs and surgery to be considered in dealing with the sick. A certain professor in one of the more important medical colleges in the Middle West used to tell his classes that the staff of a certain large hospital once agreed to substitute, for a time, weakly acidulated water in place of the drugs that were being given to all patients, and that it was found the patients made as good progress as before. It is well known that the personality of the physician has a great deal to do with the cure of his patients, and that, other things being equal, the physician who has perfect confidence in himself is vastly more likely to effect cures than the one who has not. Just how this takes place has never been fully explained, but it seems easily explainable in the light of present knowledge.

It is now generally believed that the internal secretions, by their effects on the nerve-endings while circulating through the blood- and lymph- channels, and by their influence on metabolism and cellular activity, affect beneficially or deleteriously the body as a whole.

Due prominence is not given, however, to certain states of the nervous system, or rather to certain forms of cerebration, and their effects on the internal secretions. These states may, and often do, produce acutely abnormal conditions, but more commonly, though less visibly, they are responsible for many chronic and perhaps mystifying symptoms in diseases whose chief cause or causes are referable to other factors.

The emotions and fatigue-states are etiological factors in disturbing the secretory functions referred to, and it will be our purpose to show that these factors are of much greater importance than is usually recognized. To enumerate the emotions, in the first place, will be to bring forward a group of factors the significance of which for good or evil will be at once apparent.

First and most important is *fear,* and, since it is at present impossible to carry analysis very far, we will include with fear its allies, worry, remorse, the depression of inferiority, jealousy, etc. Following these are anger, envy, grief, hatred, and finally, as factors of similar importance, physical and

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mental fatigue. Fear begins in early childhood and is probably much more prevalent and overwhelming than we imagine. A few quotations from the autobiographies of several well-known persons will serve to emphasize this.

Harriet Martineau says: "I had a dream at 4 years old which terrified me to such an extent that I cannot now recall it without a beating of the heart." "The horrors of my nights were inexpressible." "I never saw the white cloth with its circle of yellow light (the magic lantern) without being in a cold perspiration from head to foot." "Under all this," she says, "my health was bad, my behavior was dogged and provoking, and my temper for a time became insufferable."

"Oliver Wendell Holmes speaks of a certain glover's sign in the shape of a huge hand which terrified him night and day in early life." Charles Lamb says: "The night time and solitude and the dark were my hell."

That these emotions are capable of affecting the internal secretions was first pointed out by Sajous (1903), in their relations to disease, and has been demonstrated experimentally by Cannon and de la Paz (1911), in respect to the adrenals. Muenzer shows that "worry, fright, and similar emotions induce more or less organic change in the brain. This is the primary result of emotional stress; the effect of these changes in the brain may be felt in the glands with an internal secretion. The central mechanism regulating the secretion being out of order, the function of the glands suffers in turn."

The emotions which affect the body beneficially are those which produce elation or complacency, and these, from an etiological standpoint, are of less importance than the former.

Dubois, speaking of sadness, says: "This disposition of mind can be provoked by mental representations and by ideas; it is therefore of ideogenic origin. It can, on the other hand, be due to the action of a poison affecting the nerve-centers; we then recognize a somatic cause for it." "It is important, then, to recognize that the same physiological manifestations and the same pathological troubles may have physical and moral causes: it is self-evident that they may be associated."

It has never been made entirely clear how the mind and body affect each other. It has been well enough understood that toxic substances circulating in the blood can affect the brain and nervous system, but the contrary effect was in no way demonstrated. Since the importance of the internal secretions has been proven, however, and when we consider the probable and even inevitable effect which the nervous system must have on them, it seems that there is little left to be desired in the way of lucid explanation.

It should be understood that it is in atypical and larval forms of disease that these factors are seen to produce their most intense effects, and, in fact, it would be better to say that they constitute the *raison d'être* of the departure from the normal or typical conditions.

The instant response of the lachrymal glands to sorrow; of the salivary glands to forthcoming gustatory delights or a complete inhibition of their secretion under the influence of fear; the sudden activity of the sweat-glands from fear, combined with a feeling of self-consciousness or shame, are all so well known and easily demonstrable as to need no discussion.

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The natural inference is that the ductless glands and tissues producing an internal secretion are also, in like manner, affected by the emotions and fatigue, and that a diminution or an increase of the secretions is constantly effected through their control.

That this is what happens in certain profound departures from the normal is generally admitted, and it is also recognized that certain severe diseases are caused, chiefly at least, by the direct influence of emotional disturbances. Of these, the most conspicuous are exophthalmic goiter, myxedema, Addison's disease, and acromegaly.

In addition to this list Schofield enumerates the following: "epilepsy, diabetes, jaundice, urticaria, rachialgia, paralyses, boils, cancer, gastric diseases, retention, amenorrhea, granular kidney and anasarca, asthma, anorexia, nausea, dyspepsia, flatulence, gastralgia, constipation, and diarrhea." He further quotes Sansom, Huchard, Mackenzie, von Noorden, Allbutt, Murchison, Snow, and Sir S. Baker in attributing certain cases of arterial and cardiac disease, pernicious anemia, diabetes, granular kidney, cancer of the liver, uterus, and breast, and African fever directly to mental influences.

Again, he says: "The surest way to be attacked with an infectious disease is to be afraid of it." "Reflex pain is often felt from mental shock, or a sharp twinge on the receipt of bad news." After citing several deaths which were caused by emotional disturbances, he remarks: "There are few greater causes of ill health than the mental factor 'ambition.'" And, finally, he observes: "Nothing more need be added to prove the argument that we have examples of the mind as a causal factor in most organic diseases; the mental factor is present in some way or other in all diseases."

Here we have the opinions of some of the most eminent medical authorities to the effect that most diseases are wholly or in part greatly influenced by the emotions,—that many organic diseases, including even cancer, may be caused in part by emotional disturbances.

If emotion can be the starting point of these diseases it stands second to none as an etiological agent; and if it can be the starting point, why not the means of its continuation? This seems not only plausible, but inevitable, and the *modus operandi* may now be clearly traced.

Sajous says: "The posterior pituitary body is the center upon which all emotions, shock,—psychical and traumatic,—and kindred sources of nervous functional excitement or depression react, and impairment of its functions accounts for the pathological phenomena now ascribed to such causes."

Attributing, as he does, to the posterior pituitary a specific nervous control over the thyroid apparatus and the adrenals, he also says: "It is not only in acromegaly that the typical signs of impaired function of the posterior pituitary show themselves, but in all the syndromes directly ascribable to the adrenal system, *i.e.*, myxedema, cretinism, exophthalmic goiter, and Addison's disease, *which include in their aggregate the majority of organic changes of a morbid kind to which the system is liable.*" Could anything be more definite?

Either a host of competent observers are mistaken, or Sajous's deductions are erroneous, or two and two do not make four. I believe that neither of

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these three suppositions is correct. We often hear of various kinds of cases, including cancer, that get well after being pronounced incurable by reputable physicians. Undoubtedly many of these cases are faked, but mouse cancer, which "is closely allied to, or identical with, human cancer, save that it seems to be more susceptible to remedial agents," completely disappears under the influence of adrenalin injections, and Reicher believes that this is not due simply to diminished blood-supply, but to some specific action of the adrenalin.

Perhaps a concrete example of the working of the emotions on the body in the rôle of disease producers will make the subject clearer. Let us take the condition commonly known as glycosuria. In every textbook of medicine it is stated that glycosuria may be of emotional origin, and Sajous goes so far as to say that there are two forms of glycosuria, one asthenic and initiated at times by "grief, worry, and exhaustion," while the other, the sthenic variety, may be due to "anger and violent excitement." Cannon and Nice say: "Emotional increase of sugar and epinephrin in the blood accompanies fear and rage." Now, Sir B. W. Richardson wrote: "Diabetes from sudden mental shock is a true pure type of a physical malady of mental origin." Von Noorden says: "There are many carefully observed cases of diabetes on record in which the disease followed a sudden fright or joy, or some other disturbance of the mental equilibrium."

Such references could be continued almost indefinitely, but this is unnecessary. It is enough to recognize the fact that glycosuria may be caused by emotional disturbances. Let us now take up briefly the subject of carbohydrate metabolism and its relation to glycosuria.

Nearly all the carbohydrates in passing through the intestinal wall are converted into dextrose, if they are not already in that form. As dextrose, they are taken up into the portal circulation and conveyed to the liver, where, under the influence of the hepatic cells, this substance is converted into glycogen. Glycogen is stored in the liver and in the muscles, and is a form of carbohydrate which can be utilized readily when the body is in need of an additional, unusual supply of this form of food. It has recently been established that the ability to form glycogen is dependent on a secretion produced by the pancreas, acting as a hormone, and that anything which interferes with the production of this hormone will prevent the formation of glycogen; and further, that, if glycogen is not formed, dextrose will flood the blood-stream (hyperglycemia), and sugar will appear in the urine. Now there are many causes which will prevent the formation of this hormone, one of the most drastic being the ablation of the pancreas; there are also certain destructive diseases of this organ which may be responsible for such a condition. But much more important, though less spectacular, is lack of function of that portion of the pancreas which has to do with the formation of the glycogenic hormone, viz., the islands of Langerhans.

The function of the pancreas is under the control of nerves coming from the celiac plexus, which receives fibers from the vagus and from the sympathetic. These nerves to a certain extent antagonize each other. Severing the one produces the same effect as stimulating the other, within certain

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limits. The vagus is the nerve which normally controls the production of this pancreatic hormone. Atropine inhibits its production by arresting the nervous impulses usually conveyed over the vagus. Epinephrin inhibits it by stimulating the sympathetic. Any condition which acts on the nervous system in either of these two ways produces approximately the same effect.

A neurogenic glycosuria, therefore, may be assumed and as a matter of fact exists, as has been shown by the researches of many authorities. The emotion reacts on the posterior pituitary, which influences the functional activity of the islands of Langerhans. Without their secretion glycogen cannot be formed and as a result the dextrose which was poured into the portal vein passes unchanged through the liver and is excreted unchanged by the kidneys.

It can readily be seen how an increase in the secretion of epinephrin would augment the emotional factor in the functional paralysis of the islands of Langerhans; how any local disturbance of the pancreas would act in the same manner, and how an effort of the will might counteract the emotional element; or again, how by the use of certain drugs the overstimulated sympathetic may be subdued, as is accomplished by the use of codeine and morphine. It is probably quite rare that a glycosuria is produced by a direct interference with the action of the vagus, though it must be admitted to be possible, from pressure, as by tumors. Both nerves might be affected simultaneously, the vagus rendered paretic by pressure and the sympathetic stimulated, emotionally or otherwise.

It has been suggested that the theory of the action of the islands of Langerhans is not valid because when the pancreas is destroyed, as by cancer, glycosuria does not always develop; but we may easily suppose that in these cases there are accessory glands which vicariously perform the functions of the islands of Langerhans, just as there are accessory glands which take up the work of the thyroid and of the adrenals when these organs are diseased or removed. This is the more plausible, moreover, when we consider that the carotid and coccygeal glands, the function of which is not at all understood, are morphologically similar to the islands of Langerhans.

Asthma is another condition in which we may easily trace a combined psychic and glandular involvement. Asthma is a condition in which there is a state of hyposecretion of epinephrin, just as in glycosuria there is a hyposecretion of the islands of Langerhans. It is a functional paralysis, which may be almost instantly relieved by injections of epinephrin.

Violent emotions and pressure on the vagus here again are prominent among the etiological factors. Atropine increases the flow of epinephrin and is very efficient in the treatment of asthma, although it also acts by depressing the vagus and thus reduces the abnormal expansion of the lung. Morphine and codeine, which depress the sympathetic, are also valuable. Another remedial agency which is advocated and which corroborates the views presented is that of strengthening the will-power.

It must be remembered, not only in connection with asthma, but also in cancer, that the effect of epinephrin when secreted as it is in the body, constantly or as needed, and distributed where needed, must be exerted in a much

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more efficacious manner than when the substance is injected periodically and in uncertain quantities. Although satisfactory results are not obtained in cancer, for example, by injections of epinephrin, this is no reason why they may not be obtained by proper stimulation of the adrenal secretion in the living body.

There are, therefore, several ways in which we may rationally treat a person who is suffering from a deficiency of epinephrin. It is believed that this agent is used in the system to neutralize toxins. It is, therefore, proper to remove these toxins in any harmless way and thereby relieve the overworked adrenals. Colonic flushing, drinking large amounts of water, the use of antitoxin, dieting to reduce the toxins formed to the least possible amount, exercise to promote their elimination, the injection of epinephrin, and stimulation of its production by removal of excessive emotional disturbances, or by the use of drugs known to stimulate the adrenal cells to activity, are all rational modes of procedure. What is true of the adrenals, moreover, is more or less true of all the other ductless glands and tissues producing an internal secretion.

While the number of facts which might be adduced in support of this contention are legion, we shall be content to mention one more: A visible instance of functional paralysis is seen in the ocular symptoms of exophthalmic goiter. That fright will produce a transient exophthalmos is frequently noted. The expression "his eyes bulged out with fright" is a common one. That the goiter syndrome, including a permanent exophthalmos, is frequently due to fright or emotional disturbances is also well known. This condition is due to paralysis, transient or otherwise, of the muscles supplying the eyeball and lids, combined with a vasomotor paralysis, and is perfectly analogous to the paralysis that occurs in the islands of Langerhans or in the adrenals in hypoadrenia.

To summarize, then, we may conclude that:—

1. Emotions affect the mind and through it the posterior pituitary body, an organ which regulates certain internal secretions essential to health and life owing to their influence on metabolism and cellular activity, including that of the nervous system.

2. This emotional reaction on the internal secretions is responsible for a great number of disease conditions, functional and organic.

3. The profession, by overlooking this important factor, deprives itself of potent means for good through measures calculated to influence psychically the patient, and thus enhance the processes of repair through his ductless glands.

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THE EFFECTS OF MEDICINAL DOSES OF ACONITE UPON THE PULSE RATE. *

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The use of aconite as a medicine seems to date from 1762, when Baron Störck introduced the drug into practice. But aconite has been used by the laity from time immemorial, and few drugs have had a more varied history. Störck recommended the preparation as a diaphoretic and diuretic, and employed it in chronic rheumatism, gout, paralysis, phthisis, and a great variety of diseases. It was eagerly taken up by the profession, for some years was enormously used, and then fell into disuse. In 1796 Hahnemann experimented with it and recommended it in inflammatory fevers, where the allopathics would bleed. In 1835 M. Lombard, of Geneva, advocated its use as an anodyne and antiphlogistic in acute rheumatism and other acute local inflammations. "Under doses varying from ½ grain to 8 grains every two, four, or six hours, the severest attacks of febrile rheumatism yielded in the course of two, four, or six days; and even protracted cases of subacute rheumatism were often cured. The relief of pain and abatement of fever commenced in a few hours, without any critical evacuation by the bowels, skin, or kidneys" (Christison).[1]

It appears to have been Alexander Fleming who first drew attention to the action of the drug in slowing the cardiac rate. In 1845 he wrote a thesis upon the drug and showed how it slowed the heart's action. He described four stages, according to the amount given. After 5 minims of the tincture the heart was slowed; the pulse, some four hours after the administration, would have fallen some 8 beats. If a second dose were then given, or 10 drops had been given at first, the pulse would fall another 8 beats and have become weaker, though still regular. If two hours later 5 drops were again given the pulse would fall to perhaps half its normal rate, but still remain regular. In the fourth degree, after the taking of another dose of 5 drops, the pulse would become weak and irregular, and if the action of the drug were carried to a fatal extent the pulse would become gradually imperceptible. These results seem to be very remarkable until we realize that Fleming used a tincture which was some six times as strong as the U. S. P. tincture, and therefore about twelve times the strength of the B. P. tincture. He made it by passing 24 fluidounces of rectified spirit through 16 ounces of powdered aconite root, while the U. S. P. tincture is 1 in 10, and the B. P. tincture about 1 in 20. Thus Fleming used doses corresponding to ½ to 1 dram of the U. S. P. tincture, the maximum officinal dose of which is 15 minims, and for repeated doses 1 to 5 minims.

Ringer and Murrell next introduced the employment of very small but

* Read by title at the Thirteenth Annual Meeting of the American Therapeutic Society, held in Montreal, Canada, May 31 and June 1, 1912.

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frequently repeated doses, and under the influence of the former's book (passing through its many editions) this method of using the drug became very widespread, although of late years one does not hear so much of it. Ringer specially recommended its use in the treatment of inflammations accompanied by fever, and indeed said: "In the treatment of inflammations, the thermometer and aconite should go hand in hand."[2] He gave ½ to 1 drop (of the B. P. tincture) every ten minutes for two hours and then every hour, and such is the usual suggestion that echoes through most of the text-books to the present day. Under such treatment the pulse is believed to become slow, the fever to lessen, and the skin to become moist.

But, in the doses recommended in the pharmacopeias, and still less in those suggested by Ringer and Murrell, the pulse does not seem, according to our observations, to be at all affected. With any other effects we are not here concerned.

One fact that stands out with great clearness is that aconite in sufficient amounts is a violent poison, acting powerfully upon the circulation, and finally killing by paralyzing the respiratory center. Thus 1 c.c. of our solution of the crystalline aconitine (0.0225 per cent.—the strength of the B. P. tincture) killed a guinea-pig in a few minutes. In less powerful, but still large, doses it has a marked action on the heart, slowing it, chiefly through the vagus. But, as said, in doses such as are recommended in the pharmacopeias, and especially in the fractional doses introduced by Ringer and Murrell, the effect upon the circulation is *nil*, according to our findings. These negative results, of course, may have been due to either of two causes: (1) the tincture used in the experiments was weak or inert, or (2) the doses were too small to have any appreciable effect.

F. W. Price found that several, in fact all, the samples that he obtained from reputable druggists in England were inert, when tested in Professor Cushny's laboratory. He then obtained a standardized preparation from this laboratory, and still found that the drug, even in doses far larger than those recommended in the British Pharmacopeia, had no effect upon the pulse rate, and, rather as a side issue, had no influence upon the blood-pressure. These results were embodied in a paper which he presented before the British Medical Association last year.[3] At that time one of us ventured to express the opinion in discussion that small, repeated doses of the tincture (say 1 or 2 minims every fifteen minutes) had a marked effect in acute febrile conditions such as tonsillitis, it seeming to slow the pulse and produce perspiration. During the past year the writers have tested the drug as regards the effects upon the pulse rate in many cases, always using medicinal doses, and this paper gives the results of our work.

To commence with, we used the ordinary B. P. tincture which was in the Toronto General Hospital, and which had been obtained, as we afterward found, from three reputable firms of wholesale druggists. The pulse rate was usually taken for some hours both before and after the administration, and in many cases the blood-pressure was also measured, but no effect upon the circulation was detected. Often considerable fluctuations were seen, but

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it was found that these were mere coincidences and were just as apt to occur without the aconite. After finding no effects from the administration of the hospital tinctures we wrote to a well-known drug firm and they kindly forwarded a quantity of B. P. tincture "which has been tested both physiologically and in the laboratory and which we guarantee is of B. P. strength." Most of our experiments were done with this tincture, and were still negative. Then we got Dr. V. E. Henderson, associate professor in charge of the Pharmacological Department of the University of Toronto, to test this tincture, and he reported it as very weak. The bottle had stood in a room at about 60° F. for some three months before he tested it, and probably had depreciated since we first got it. Next, the same firm kindly sent us some pure crystalline aconitine, which Dr. Sharpe, of the Pharmacological Department, found by experiments on animals to be of full activity. He was good enough to make for us a solution of it corresponding in strength to the B. P. tincture, viz., 0.0225 per cent., and we continued our experiments with this solution,—still with negative results.

Our experiments were done, as will be seen from the table below, upon two classes of patients: (1) those with normal pulses, and (2) those with abnormally frequent pulses. Some of the latter had fever and some had normal temperatures. In none of them (51 in all) was any decided effect upon the pulse rate observed. Occasionally the pulse would be found to be slow after the taking of the drug, but when the pulse was watched for hours before and for hours after the administration it was seen that such fluctuations occurred without any aconite. The psychic effect of the administration, with the frequent taking of the pulse, must be taken into account. In 1 case of persistent tachycardia, following typhoid fever, the pulse dropped some 40 beats for twelve hours after small, repeated doses were given, which looked like a marked effect, but when the experiment was repeated upon the same individual under exactly the same conditions no such result, or rather sequence, occurred.

It appears, from both Dr. Price's findings and our own, that the tincture of aconite on the market is usually inert. We have discussed this matter with Dr. McGill, chief analyst to the Inland Revenue Department of Canada, and he hopes soon to examine samples from various parts of the Dominion. The results will be interesting. The difficulties of testing the drug, however, are great. The aconite root contains at least three active principles—*aconitine, aconine,* and *benzaconine*—and although it is an easy matter to assay the total alkaloids, it is very difficult to find the proportion of aconitine. Yet it is upon this alkaloid that nearly the entire action of the root depends. A simpler test, and one which is chiefly employed by the manufacturing houses, is the "Squibb test." This depends upon the fact that aconitine, and it only, produces, when applied to the tongue in great dilution, a tingling. A solution of 1 in 500,000 of aconitine will give this reaction. A solution of 1 in 70 of the American tincture or 1 in 35 of the B. P. preparation acts similarly. A dram of the dilution is held in the anterior part of the mouth for exactly one minute and then is discharged. A distinct tingling should be perceived

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within ten to fifteen minutes. Mr. F. O. Taylor, who has written very fully upon the tests for aconite,[4] believes that this is the best practical test that we possess. None of the tinctures that we procured gave this reaction, but the solution of crystalline aconitine, which was of the strength that the tincture should be, and was then diluted as described, gave it very distinctly. This same solution, however, only gave the Squibb reaction when four times as strong as three months before, thus showing how apt it is to depreciate with keeping.

But even when the drug is active, small doses seem to have no effect upon the pulse rate. How, then, may we explain the reports to the opposite effect which teem in medical literature, and which support the advice found in nearly every textbook of therapeutics and medicine? To our minds it is another example of the *post ergo propter* fallacy, which fallacy is so often seen in medicine and has so often been responsible for many findings which further trial has shown to be without foundation—something is given and the patient improves: *ergo,* the improvement is due to the something given.

The examples of marked and even dangerous effects obtained from small medicinal doses of aconite which are occasionally chronicled can be due only to one of two things: (1) either there has been some mistake in the dispensing or administration of the drug, so that the patient has received far more than was intended, or (2) an idiosyncrasy must exist, so that toxic effects are obtained from a dose which ordinarily has no effect. For example, Woodbury[5] records a case of nearly fatal poisoning from 3 drops of the tincture. No doubt, as Shoemaker says,[6] the toxic dose and the susceptibility to aconite both vary greatly in different subjects.

It can truly be said that the theme of this paper is destructive rather than constructive, but surely the subject of therapeutics almost more than any other part of the domain of medicine requires destructive criticism in order that we may clear away the chaff and thus make more clear the valuable parts that remain. The pharmacopeias of old contained many weird substances, such as human urine, which were gravely prescribed by earnest men, and good followed; and yet we do not believe nowadays that that good resulted from the remedy used. And the pharmacopeias of today contain many substances which might well be left out, and we believe that aconite, certainly in the doses recommended, is one of these.

As already said, aconite, when given in massive doses, is an extremely powerful body, and it may be of great value where it is desired to slow the pulse or obtain some of its other effects, but this paper is not dealing with such use of the drug at all.

Dosage of B. P. tincture.	Condition of patients.	Age.	Effects on pulse rate.
One minim every ten or fifteen minutes for 8 to 10 doses.	8 convalescents with normal pulse rates		nil
	8 convalescents with frequent pulses.		nil
	Posttyphoid tachycardia	25	nil
	Posttyphoid neuritis	45	nil
	2 healthy orderlies		nil
	Tuberculous knee	20	nil
	Typhoid fever	22	nil

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Two minims every ten to fifteen minutes for 8 to 10 doses.	Acute tonsillitis	23	nil
	Hysterical vomiting	21	nil
	Cholecystitis	50	nil
Three minims every ten to fifteen minutes for 8 to 10 doses.	Convalescent typhoid	25	nil
	Gall-stones	28	nil
	Rheumatoid arthritis	23	nil
	Streptococcic septicemia	24	nil
	Pleuropneumonia	55	nil
	Septicemia	24	nil
	Convalescent pleurisy	28	nil
Four minims every ten minutes for 8 doses.	Pleuropneumonia	25	nil
	Do. repeated		nil
Four and a half minims every ten to fifteen minutes for 8 to 10 doses.	Phthisis pulmonalis	30	nil
	Convalescent typhoid	25	nil
	Rheumatic arthritis	60	nil
	Hysteria	22	nil
Two minims every hour for 4 doses.	Convalescent typhoid	25	nil
Three minims every hour for 10 doses.	Convalescent typhoid	25	nil
	Tuberculosis	30	nil
	Mitral stenosis	22	nil
	Gall-stones	22	nil
	Arthritis deformans	21	nil
Four and a half minims every thirty minutes for 10 doses.	Tuberculosis	30	nil
Six minims every hour for 10 doses.	Posttyphoid neuritis	45	nil
	Arthritis deformans	22	nil
Ten minims every hour for 10 doses.	Exophthalmic goiter	18	nil
	Splenomyelogenous leukemia	45	nil
	Chronic rheumatism	25	nil
One dose of 15 minims.	Neurasthenia	21	nil
	Rheumatoid arthritis	25	nil

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THE ADRENALS AND THE BLOOD-PRESSURE IN THEIR RELATIONS TO ARTERIOSCLEROSIS.*

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The functional relationship existing between the adrenals and the blood-pressure through the direct action of the secretion of these organs upon the muscle-fibers of the heart and arteries, as demonstrated by Oliver and Schäfer, has now become classic. It is clearly established also that the terminal arterial ramifications which supply the capillaries, the arterioles, receive the brunt of the contractile action of the adrenal product. This action is not limited to any particular organ; it is quite general, as demonstrated by plethysmographic observations of the extremities, kidneys, spleen, etc. In the ten minutes to which I must limit my remarks, owing to the many papers which form this symposium, I shall be able to submit for discussion only one of the morbid effects this action of the adrenal secretion on the arterioles may entail: arteriosclerosis.

The production of vascular lesions resembling, at least, those of arteriosclerosis by injections of epinephrin is a familiar fact of experimental medicine. First observed by Josué, this phenomenon has been witnessed by many other investigators. Some of these, Lissauer for example, have argued that the lesions differed from those of typical arteriosclerosis, and that they rather approximated those of syphilitic angiosclerosis; but when we recall that syphilis is one of the important etiological factors of arteriosclerosis, it seems clear that Lissauer's view is hardly well founded. Again, it was found by Miles that there was no constant relationship in rabbits between the extent and frequency of the lesions found and the size and frequency of the doses administered; but doubtless, here age, vigor, size, and other individual peculiarities prevailed in the different animals to modify more or less the effects of the drug. Nor is the occurrence of the spontaneous degeneration noted by Miles and Johnstone a valid objection; it only shows that rabbits, like man, are subject to the disease, a fact which places its artificial production on a sounder basis. These few examples will suffice to sustain the point I wish to make in this connection, to wit, that even the various objections that have been recorded against the validity of Josué's opinion tend to show that the active principle of the adrenal secretion can produce lesions which are at least very similar to the familiar lesions of arteriosclerosis. Thus, as stated by Guthrie McConnell very recently: "The changes which develop do not correspond accurately with those of the ordinary nodose sclerosis, but they are, however, indistinguishable from the changes seen in Moenckeberg's type of medial degeneration. There is the same atrophy of the muscle-fibers and

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giving way of the media with the production of pouchings, which at times are so extreme as to become definite, small, sacculated aneurisms. There is a fatty, followed by a calcareous, degeneration of the elastic tissue elements of the coat."

Remaining strictly within the field of the pathogenesis of the disease, we are brought to inquire into the manner in which it is produced in man through the adrenals in the light of the above facts, and with the generally recognized causes as pathogenic factors.

Thayer's[1] series of 3894 cases studied in Osler's wards gave heavy work, alcoholism, rheumatism, diphtheria, scarlet fever, syphilis, malaria, and pneumonia as the most important factors in the order of their enumeration, heavy work being represented by 62.2 per cent. In Huchard's[2] series of 1835 cases the predominating causes were, in the order of their importance: gout, rheumatism, syphilis, the abuse of tobacco, infectious diseases, diabetes, alcohol, and malaria. Brooks's[3] series of 400 cases gave occupational lead poisoning, severe manual labor, alcohol, nephritis, syphilis, and tuberculosis as the conspicuous causes, their importance decreasing in the order named. These statistical figures, based on an aggregate of 6129 cases in various parts of the world, suggest a toxemia as the common pathogenic factor of the disease —specific toxins where infectious diseases are the causative agents; excessive metabolism and tissue waste products in hard physical labor; purin bases in the gouty, as well as in the cases due to chronic lead poisoning, which, as believed by Frank S. Billings, promotes a condition akin to gout with nephritis as a complication. All these main causes of arteriosclerosis, when reduced to their simplest expression, can thus be summarized by this one word: intoxication, as long ago emphasized by Traube and Rokitansky.

What is the relationship between this general toxemia and the adrenals?

Suggestive in this connection is the fact that all but one of the morbid conditions (the exception being alcohol, which has not been studied in this connection) known to provoke arteriosclerosis have also been found to cause overactivity of the adrenals.

Prominent, we have seen, is the excessive physical labor, which in Thayer's statistics stood first in the list as the cause, with over 62 per cent. of the 3894 cases studied. Now, Abelous and Langlois[4] twenty years ago showed conclusively that the internal secretion of the adrenals destroyed fatigue products, *i.e.*, toxic wastes generated during muscular activity. This has been confirmed by Mosse[5] and others. That arduous and prolonged muscular labor should under these conditions entail overactivity of the adrenals is self-evident. Febrile infections, so prolific collectively as a cause of arteriosclerosis, are also known to promote abnormal adrenal activity. Diphtheria toxins, for example, were found by Wybaux[6] to produce marked hyperemia of the adrenals, which when excessive leads to destruction of the organs. Is this due to a local toxic necrosis or to excessive stimulation by the toxin? This is answered by the fact that the prolonged use of diphtheria toxins in small doses by Langlois and Charrin[7] in guinea-pigs produced not degeneration of the adrenals, but hypertrophy—so marked, in some instances, as to cause these

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organs to attain four times their normal size. Petit[8] noted the same phenomenon in fishes; Stilling,[9] in rabbits; Auld,[10] in cats. Roger[11] obtained the same hyperemia—sufficient in some instances to produce adrenal hemorrhage—in guinea-pigs with the pneumococcus, and Langlois,[12] with the *Bacillus pyocyaneus*. The excessive production of adrenal secretion during the prevalence of these toxemias is further shown by the post-mortem exhaustion of the active adrenal principle noted by Bainbridge and Parkinson[13] with the aid of the chromaffin test and also by Luksch,[14] who employed as test-criterion the relative pressure-raising power of extracts prepared with the organs of subjects in which death had been due to uremia, phosphorus poisoning, and infectious diseases. As to the influence of excessive smoking, Cannon, Aub, and Binger[15] have recently found experimentally that "nicotine in small amounts (0.0035 to 0.0075 Gm. in cats) caused an augmentation of adrenal secretion."

This evidence is further sustained by the fact that Coplin,[16] in an histological examination of the adrenals of 22 cases of arteriosclerosis, found that 17 were markedly altered, the exceptions being the seat of a tuberculous process in 3 instances and of a secondary neoplasm in 1. Again, potassium iodide, our best remedy in arteriosclerosis, has been found by Vernulet and Dmitrowsky to inhibit the secretory activity of the adrenals. On the whole, the causal relationship between overactivity of the adrenals induced by the various toxics enumerated and arteriosclerosis seems clearly defined.

We are thus brought to attribute to adrenal overactivity, in the production of clinical arteriosclerosis, a process similar to that caused by Josué when he injected epinephrin experimentally. What is the nature of this process?

We have seen that the predilection of the adrenal product for the arterioles is generally recognized. In other words, whether we inject epinephrin or whether the adrenals are overactive, what effects are produced on the vascular system *per se* are borne directly by these terminal arteries. This appears to me to furnish the key to the situation, or rather the missing link of a chain of facts which clearly explain the pathogenesis of at least the familiar forms of arteriosclerosis from beginning to end. Indeed, the arterioles being the channels through which the vasa vasorum are connected with the general arterial circulation, any condition capable of reducing the caliber of the former—the arterioles—reduces in proportion the volume of arterial blood they supply to the vessel walls through these minute nutrient vessels, the vasa vasorum. If this deficient nutrition of the vascular tissues is continued sufficiently long, they become necrotic or atheromatous and ultimately sclerotic, mainly around their nutrient vessels. We have the testimony of Councilman to this effect, this pathologist having found that "in the circumscribed or nodular arteriosclerosis the primary alteration consists in a degeneration or a local infiltration in the media and adventitia, chiefly about the vasa vasorum." Cowan[17] noted, in fact, that vasal changes were sometimes the only visible lesions, and he refers to cases in which "the interference with the vascular supply from the vasal vessels produced medial and intimal necrosis."

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Summarizing the foregoing data, all of which are based on clearly defined experimental and clinical observation, I would submit that the interposition of the adrenals and the contractile action of their secretion upon the arterioles in the problem enable us clearly to understand the manner in which so many forms of intoxication can cause arteriosclerosis. Briefly, the pathogenic toxic, whatever it happens to be, causes a more or less violent overactivity of the adrenals (probably by exciting their center) and thus increases sufficiently their secretory activity to reduce more or less the caliber of the arterioles from which the vasa vasorum receive their supply. Deficiently nourished through these their nutrient vessels, the medial and intimal vascular tissues degenerate, forming the familiar sclerotic patches.

This may not represent the sole pathogenetic chain of events,—indeed, I believe that autolysis, through the presence of an excess of antibodies in the blood, may engender what might be termed an acute form of arteriosclerosis in certain febrile infections, typhoid fever and acute rheumatism, for example, —but it does, in my opinion, include the vast majority of cases we meet in everyday work.

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ACUTE NEPHRITIS, TREATMENT OF.

Bodily Rest.—Acute nephritis patients should be kept in bed until the nephritis is completely cured, or until it has entered into a chronic stage, in which rest in bed can no longer be of service. The most important criterion for the time when the patient is permitted to get up is the disappearance of red cells and kidney epithelium from the urine. As long as these elements are present the acute stage of irritation

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is not over. After their complete disappearance one should wait two weeks and then, despite continuance of albuminuria, the patient should be allowed to get up, provided, of course, that all other symptoms of nephritis have disappeared. It will then frequently be seen that in the first days after giving up complete rest the albuminuria increases somewhat. This lasts only a short time and should not alter one's decision. On the other hand, recurrence of red cells and renal epithelium should be regarded as proof of undue haste, and then it is necessary to order rest in bed again.

Diet.—The kidneys eliminate (1) the metabolic products of the proteids; (2) nearly all salts, especially phosphates, sulphates, chlorides; (3) water.

We limit therefore first of all the proteids or exclude them entirely. By so doing we diminish the amounts of sulphates and phosphates, as these salts are in great part derivatives of the proteids. To make up for resulting deficiencies large amounts of carbohydrates are given. The end-products of the carbohydrates are carbon dioxide and water, and carbon dioxide is excreted by the lungs. At the same time the cleavage of the body proteids is reduced to a minimum under the influence of large amounts of carbohydrates. A regimen is thus achieved which makes practically no demands on the renal functions.

Salt must of course be withheld, as its elimination is a difficult task for the diseased kidneys. The diet is limited therefore to considerable amounts of sugar, to fruit juices and fruits rich in sugar, to gruels of finely ground rice, corn, wheat, or potato starch. Thoroughly washed butter may be added, as pure fat is also oxidized to carbon dioxide and water and does not tax the kidneys. The author has often administered such a diet to his patients with acute nephritis for one or two weeks, and been much more satisfied with the results than before. Formerly he gave nothing but milk, as is still the custom with most physicians. But milk contains large quantities of proteids, with many phosphates and sulphates. Even if poor in sodium chloride and free from extractives, a milk diet burdens the kidneys.

He advises giving milk only after the most dangerous stages of the acute nephritis have been overcome and when the abundant diuresis, the increasing content in sodium chloride, and the decrease in albumin show that the kidneys have regained their power of elimination. The time has then come to enlarge the menu gradually. In addition to milk are added preparations of oats, barley, purées of potato or carrots, legumins (peas, lentils, white beans), boiled green vegetables, cocoa, yolk of eggs, light tea biscuit, etc. Salt should for a long time be excluded carefully. Considerably later may be added white of eggs, river fish, and boiled meat.

If the nephritis is completely cured, an average normal diet may be resumed three or four weeks after the last appearance of albumin, but the patient should for a long time eat meat only once daily, should avoid spices and alcohol, and should take as little salt as possible. If the albuminuria does not fully disappear the patient should be placed upon a diet suitable for chronic nephritis.

As for fluids, fruit juices or thin decoctions of tea (Chinese tea, tea of grass seeds, of dried strawberries or raspberries, tea of blackberry leaves, etc.), or simple pure water, are best. In the

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severe stage of an acute nephritis it is useless to attempt to wash out the kidney by large amounts of liquid, which only serve to increase edema.

When diuresis shows a tendency to increase, as in convalescence, large amounts of fluids are of service, though the author recommends strongly to avoid the actual mineral waters, which contain too much salt.

Elimination by Other Routes.—This is comparatively easy as regards water, but very difficult when it concerns solid constituents. The elimination of urea by sweating is by no means as great as was formerly supposed. It hardly pays to subject the patient to the debilitating process of the sweat bath in the hope that a part of the retained urea and other products of albuminoid decomposition can thus be eliminated. The elimination of sodium chloride by sweating is a little more important, but the elimination of urea and sodium chloride which can be effected by strong cathartics is decidedly greater.

In acute nephritis *water alone* can be diverted into other channels of elimination. On this account the various diaphoretic measures have really no justification except in cases with edema.

There are several methods of removing water from the body of the nephritic patient. Of diuretics, the theobromine preparations alone seem often to be of service. They dilate the finer capillaries of the kidneys and favor the blood-supply of the diseased organ. The ingestion of fluid may be limited, but not for any length of time, for the patients are limited to a diet that contains a good deal of water (for example, milk) or that requires water in its preparation.

The amount of salt may be reduced to a minimum. This is valuable, however, only for those cases in which the difficulty of salt elimination (through the kidneys) is the chief cause for the retention of salt in the body and, further, for the development of edema. In the majority of cases of nephritis, besides other causes for edema (as damage to the capillary walls by toxic substances), the power of the kidneys to eliminate water is much more limited than the ability to eliminate *salt;* then forbidding salt simply makes food distasteful to the patient and still further reduces him. Thus, the rule to forbid salt, so beneficial in many cases, can become most harmful if applied universally. In acute nephritis the object of salt deprivation is, above all, to *spare* the diseased organ the labor of salt elimination.

As for diaphoresis, too much liquid should *not* be given when diaphoretic cures are ordered. Otherwise a vicious circle is established. The same effect as from sweat baths may be obtained through residence in a climate that is at once hot and dry. These are the characteristics through which the climate of the Egyptian deserts acquired its reputation.

Puncture of the skin affords another method of getting rid of fluid, but it is to be used only in the worst cases where all other methods have failed.

In threatening uremia, copious bleeding by venesection is often of the greatest advantage. If it gives no result, one should not delay to split the capsule of the kidneys and so relieve the tremendously swollen organs from pressure. The number of cases is already considerable in which this procedure has led to satisfactory results. Carl von Noorden (Post-Graduate, January, 1913).

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CARCINOMA OF THE UTERUS, A RATIONAL METHOD OF TREATMENT OF.

The author describes a method of treating this affection which, he believes, offers in the way of relief a wider margin of probability than any other. Its value depends on (1) the destruction of the gross mass of carcinoma in the uterus by the actual cautery heated to a little less than a dull cherry-red heat; (2) the application of the heat to the pathological tissues until the whole pelvis, if possible, has its temperature raised to 120° F. The coagulation point of blood is 120° F.

That the uterus should be made a charred lump is necessary for two reasons: (1) when the slough is thrown off, the shell remaining should become a cicatricial mass free from carcinoma; (2) in order to get the requisite amount of heat in the outlying confines of the pelvis, it is necessary to destroy the uterus slowly.

In operating, the patient is placed in a modified Trendelenburg position, the feet being elevated and held by stirrups, as in the lithotomy position. A suprapubic opening is made only sufficient for the assistant's fingers to determine the amount of heat that is coming into the pelvis when the cautery is applied to the diseased structures through the vagina. The gloved fingers can usually stand a temperature of 110° to 115° F. (43° to 46° C.) in the pelvis. The cautery gradually raises the temperature in the pelvic tissues until this limit is reached.

To protect the vaginal walls from the excessive heat, a speculum designed on the principle of the vacuum bottle with a high degree of vacuum and made of glass that will stand a maximum degree of heat without cracking is used. The cautery used is electric, water-cooled, and the degree of heat is controlled by a rheostat. A cartridge-shaped cautery, to be heated in a gas stove, will also do excellent work in the average case.

In old women who have not borne children for many years and with the vaginal canal small and atrophied, a vaginal dilator is used in preference to dilatation by the manual method. Where the vaginal walls are involved in the extension of the disease from the cervix, the disease can best be treated by raising the temperature in the vagina so that a thermometer in the urethra will register 115° F.

In the bad cases where the vaginal canal is almost closed by the growth, the finger in the rectum and the thermometer in the urethra afford the only definite method possible of treating these cases. The procedure stops hemorrhage and offensive discharge and arrests, for a time at least, the further progress of the case.

The assistant's fingers in the pelvis can push the carcinomatous mass down upon the cautery. The assistant warns as to the approach of the hot iron in the vicinity of the ureter and can direct the operator as to the necessity of pushing the cautery into the broad ligaments. The operator's fingers in the rectum can more efficiently guide the electrode posteriorly than can the assistant's fingers in the pelvis. In two or three cases the uterus was perforated with the cautery, but there were no untoward results, and in two cases where the abdomen was reopened for a recauterization no pelvic adhesions were found.

It requires about one hour to treat thoroughly a malignant uterus with the cartridge type of cautery heated in the gas stove. The electric cautery requires about half this time.

One of the first results noticeable after the use of the cautery is the disap-

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pearance of the cachexia, which occurs within two weeks. The skin becomes clear and healthy looking, the appetite returns, the pain stops, and with the disappearance of the hemorrhage and foul discharge hope returns. James F. Percy (Physician and Surgeon, November, 1912).

DIABETES MELLITUS, LACTIC ACID BACILLI IN TREATMENT OF.

While all are agreed that in cases of diabetes that come to autopsy there are found changes in the pancreas, especially in the islands of Langerhans, and that these changes are probably present in all cases of diabetes, with perhaps irritation and changes in the suprarenals, thyroid, nervous system, and hypophysis, still these changes are also caused, according to the author, by an autointoxication. In the majority of cases the indican output is in close relation with that of sugar.

In 13 cases the author administered cultures of the lactic acid bacillus (*B. bulgaricus*) in doses of 4 to 16 c.c. (1 to 4 drams) three times daily, with the idea that, by overcoming putrefaction in the alimentary tract and hence the autointoxication, influences irritating the sugar-regulating apparatus would be removed and the glycosuria therefore reduced. The results obtained seemed to justify the views advanced, the urine showing a marked reduction both in the indican and the sugar as the result of lactic bacillus treatment.

Experiments *in vitro* showed that carbohydrate digestion by pancreatic juice is rendered very much slower by the presence of lactic acid. It seems probable to the author, therefore, that the results produced are due not only to the removal of putrefaction, but also to the fact that owing to lengthening of the period of carbohydrate digestion through the presence of the lactic acid bacilli only small amounts of sugar are formed and absorbed. A further result of this is that the tolerance of the patient for carbohydrates gradually increases. P. Horowitz (Medical Record, January 25, 1913).

FAUCIAL TONSIL, INDICATIONS FOR REMOVAL OF.

The following points are especially emphasized by the author in this connection:—

A small tonsil may require removal as urgently as a large one. Size has nothing to do with the indications for removal, excepting for symptoms of obstruction. Simple hypertrophy in a healthy individual is not an indication for removal. It becomes so when the degree is such that respiration, deglutition, or speech is interfered with.

Tonsils with crypts which fail to clear themselves become the seat of chronic lacunar disease, and systemic infection is likely to occur. As a general proposition the free, outstanding tonsil is less likely to cause trouble than the submerged tonsil. This is because drainage from the crypts is better. The submerged tonsil, partly buried beneath the faucial pillars, is very likely to require removal, because drainage from the crypts, especially those emptying into the supratonsillar fossa, is interfered with. In examining this class of cases the pillars should be retracted in order better to investigate the condition of the crypts.

Glands at the angle of the jaw that persistently remain palpable are evidence that the tonsillar barrier to infection has been passed, and constitute an indication for tonsil removal. W. H.

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Tomlinson (Therapeutic Gazette, February 15, 1913).

GONORRHEAL RHEUMATISM, TREATMENT OF.

Acute forms of gonorrheal rheumatism should be treated during the febrile stage with sodium salicylate, 1 to 1½ drams (4 to 6 Gm.) in the twenty-four hours, or by acetylsalicylic acid, 20 to 30 or even 40 grains (1.3 to 2.6 Gm.). Large doses of the salicylate should be freely diluted. Sometimes such treatment causes a sudden retrogression in the pain and fever, and the axiom, once universally recognized, that the effect of the salicylates established the differential diagnosis between ordinary and gonorrheal rheumatism must not be construed literally. Often, however, these drugs prove unavailing. Recourse must then be had to antipyrin, pyramidon, quinine, etc., though this purely symptomatic medication has no influence on the underlying cause of the joint condition.

When effusion is copious enough to cause intolerable pain and persistent insomnia or threatens local mischief, such as dislocation, rupture of the synovial membrane, or spontaneous luxation, recourse must be had to puncture, repeated if necessary, in addition to active counterirritation. As soon as the acute symptoms have subsided, passive movements and massage should be practised. In the suppurative and grave forms, arthrotomy, either simple or followed by the application of iodine or zinc chloride, may become necessary.

Recent research has added a whole series of new measures to those already available: (1) Antigonococcic vaccination. Mauté advises a first injection of 25 million dead gonococci, followed by the same number four days later and 50 million every five or six days thereafter. These injections are made into muscle and rarely give rise to any local or constitutional disturbance. In favorable cases pain diminishes, the effusion undergoes absorption, and the fever disappears. (2) Antimeningococcic serum. Injections of 30 c.c. of the Dopter and Flexner serum are given subcutaneously every other day. (3) Autoserotherapy. Some of the articular fluid is withdrawn and 10 to 20 c.c. forthwith injected either near to or at a point distant from the affected joint. (4) X-rays or radium, in obstinate cases. Radium may be applied either in the form of radioactive mud, kept on from six to twenty-four hours and renewed daily for from eight to ten days, or in the form of injections of radium salts, 20 to 50 micrograms into each joint, after evacuation of the latter. The radium injections appear to have given especially favorable results in acute cases with marked inflammation. (5) Bier's hyperemia. The band is applied for an hour or so daily or every other day. (6) Hot-air treatment. This seems to the author far more trustworthy than the other measures, whether applied by means of douches or by placing the joint in a hot-air box. The temperature in the latter may be raised to from 175° to 210° F. for from half an hour to an hour at a time.

In the chronic forms of gonorrheal rheumatism, additional special measures may be called for. The genitourinary canal must be disinfected, and it should be borne in mind that many cases are consequent upon slight uterine affections or chronic urethroprostatitis. Léopold-Levi and others have reported good results from thyroid preparations. Two-grain (0.12 Gm.) cachets of thyroid powder can be given 1 to 3 times daily,

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unless symptoms of intolerance should appear. Where the joint has become deformed, one might try the effect of thiosinamine or fibrolysin injections, *e.g.*, 2 c.c. (30 minims) of the latter daily for a fortnight. J. Dardel (Medical Record, January 25, 1913).

HEADACHE, TREATMENT OF.

Treatment of severe headache by inducing an abundant flow of nasal secretions is recommended by the author. Migraine and other forms of severe headache are benefited, the close connection between the nasal and intracranial circulations being taken advantage of to draw serum from the latter area, thus relieving congestion of the dura and pia. To bring on the flow of nasal secretion, the author uses one of the following formulæ:—

I.

℞ Mentholis, gr. viiss (0.5 Gm.).
Acidi borici, gr. xv (1 Gm.).
Iridis florentinæ,
Sacchari lactis, of each, 3ss (2 Gm.).
M.

II.

℞ Pulveris mayoranæ,
Iridis florentinæ, of each, gr. xv (1 Gm.).
Sacchari lactis, 3ss (2 Gm.).
Veratri (albi), gr. ii¼ (0.14 Gm.).
M.

A. Lorand (Münchener medizinische Wochenschrift, October 8, 1912).

HEXAMETHYLENAMINE, OBSERVATIONS ON THE ACTION OF.

Tests performed by the authors with hexamethylenamine (urotropin) showed that formaldehyde appears in the urine of only 52 per cent. of patients taking the drug. The reaction of the urine is of no importance, according to the authors, in this connection. Alkalies taken with or in combination with hexamethylenamine have no effect on excretion. The duration of the excretion of formaldehyde set free from hexamethylenamine is about four to six hours. Increase of dosage does not affect excretion in negative urines. Hexamethylenamine produces practically no symptoms in the average dose. The urine of all patients taking hexamethylenamine should be tested for formaldehyde. Patients not excreting formaldehyde are symptomless regardless of the amount of hexamethylenamine taken. O. R. T. l'Esperance and Hugh Cabot (Boston Medical and Surgical Journal, October 24, 1912).

IODINE, USE OF, IN OPHTHALMOLOGY.

The author has for the past three years used iodine in the form of an ointment, with an anesthetic, as a disinfectant of the cornea, notably after the extraction of foreign bodies. The formula is as follows:—

Stovaine, 0.15 Gm. (2¼ grains), finely pulverized and dissolved in 5 drops of official oil.

Add, after mixing, preferably on a water bath:—

℞ Hydrated wool fat, gr. lxxv (5 Gm.).
Petrolatum, 3iiss (10 Gm.).

Add gradually the following solution:—

℞ Iodine, gr. ii¼ (0.15 Gm.).
Sodium iodide, gr. ivss (0.3 Gm.).
Water, ♏xxiv (1½ Gm.).

Dewaele (Transactions of the Belgian Ophthalmological Society; Ophthalmology, January, 1913).

LARYNGEAL TUBERCULOSIS, SUBMUCOUS CAUTERIZATION IN.

Attention is called by the author to submucous cauterization as a method of treatment which, in his hands, has healed from 70 to 85 per cent. of the cases in which it was applied.

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The operation is done with the electric cautery. Any electrode handle may be used, although the one of Shecks, following the lines of construction of the usual endolaryngeal forceps, is most convenient. The tip of the electrodes should be generally oval in shape, drawn to a rounded point at the distal end, and fairly sharp. One tip should be transverse to the axis of the shaft, the other in the same plane. By varying the position of the handle, it is possible with these two tips to make a puncture in any desired position in the laryngeal mucosa.

Preliminary to operation it is well to make a few local applications to the larynx of some bland oily solution, in order to accustom the patient to endolaryngeal instrumentation and overcome irritability of the throat when the mirror is placed against the soft palate.

In performing the cauterization, cocainization should be thorough; 20 per cent. is the best and safest solution; if after three or four applications anesthesia is not produced, the author at once proceeds to a 40 per cent. solution. The point of application of the electrode should be far enough away from the healthy tissue, in the tuberculous mass, so that the heat necrosis will just about reach the normal laryngeal mucous membrane. The instrument is introduced cold, applied upon the selected site, enough current turned on to produce only a fairly bright cherry red, and pressure applied until the tip of the electrode has sunk into the tissue to a depth corresponding to the vertical extent of the lesion. The application is continued until the whitened cauterized area has reached the apparently normal tissues; the current is then turned off and the instrument quickly withdrawn, avoiding contact with other tissues.

Immediately after operation one sees a whitened area in the center of which is a brown stain. The whiteness persists for several days and is accompanied by slight inflammatory reaction and pain. Healing takes place in one of two ways: either the entire cauterized area sloughs off in about a week, leaving a simple ulcer in healthy tissue, which readily heals, or it remains *in situ* and becomes converted into a mass of dense connective tissue, which shrinks, and inside of two or three months the site of a previously flourishing tuberculoma is impossible to discover.

The advantages of the method over curettage are that it is easier to perform, that there is absolutely no bleeding, and that the results are better. It is not suited for superficial ulcers on the posterior wall, particularly those on the cords, which do better on the old method of lactic acid applications. The operation is of questionable value, in weak, nervous, irritable individuals with advanced pulmonary lesions, or when the patients are poorly nourished.

The cautery should not be too hot; a white heat is dangerous. The puncture should not be too deep, nor should more than two separate punctures be made at one sitting. The immediate neighborhood of the cricoarytenoid joint should be treated with great respect.

After the operation the patient should be put upon a fluid diet, preferably milk. Rest for the larynx is important. On the first and second days, insufflations of morphine and an antiseptic powder may be given, and by the third or fourth day the latter powder alone is sufficient. In about a week, or when the slough has separated, instillations of menthol in 2 or 3 per cent. solution in oil should be made. Small doses of creosote or guaiacol carbonate are also

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useful at this time. Tonics and the general treatment of tuberculosis must naturally not be neglected. The operation may be repeated within two or three months if the cure is not complete, but the necessity for this is rare. R. Pettit (New York Medical Journal, January 18, 1913).

MEASLES, INUNCTION TREATMENT OF.

The following measures were employed by the author in a series of 160 cases of measles: A hot bath was first given, then a thorough application of eucalyptus oil made to the whole body, with the exception of the hands and the part of the face about the nose, mouth, and eyes. The mouth was irrigated twice daily with a weak alum lotion, and glycerin and borax applied to the interior of the mouth and to the gums. The throat (tonsils and fauces) was treated with phenol (1 to 10) morning and evening, using a firm mop of cotton-wool on the ends of a pair of forceps. Every day for the following four days the child was blanket-bathed morning and evening, and again rubbed over with eucalyptus oil, the throat and mouth having the same treatment as on admission.

In the cases thus treated, the total number of deaths was 8, giving a case-mortality of 5 per cent. Among 100 cases of measles previously treated without the inunction method the mortality had been 11 per cent. The children were from the poorest class of the community, prone to all kinds of infection, and having poor resisting powers. Even when serious complications were present, the treatment had a beneficial influence in the course of the disease.

The favorable effect of the treatment is mainly brought about, in the author's opinion, by the inhalation of the vapor of eucalyptus, and the local application to the mouth and fauces of antiseptics. The virus most probably attacks the air passages first, where also secondary infection is likely to arise. It is difficult to say how far the absorption of the eucalyptus *via* the skin plays any part in the curative value of the treatment.

Careful and constant nursing and maintenance of an even air temperature of 65° F. are very important accessory measures.

In the time of an epidemic in large institutions and hospitals, or even in their own homes when the children are excluded from school, they should be given the treatment for prophylactic purposes. D. I. Connolly (Practitioner, November, 1912).

NEOSALVARSAN, DEATH AFTER INJECTIONS OF.

A case of death from neosalvarsan in a man 41 years of age is reported by the author. The patient was alcoholic, but upon examination had exhibited no renal, nervous, pulmonary, cardiac, or hepatic weakness. He had a chancre on the lip of twelve days' standing. The first injection was of 0.45 Gm., the second and third, after weekly intervals, 0.6 Gm., and the fourth, ten days later, 0.9 Gm. Freshly distilled and sterilized water was used. All the injections were well borne, but thirty-six hours after the last a scarlatinoid erythema appeared. Five days later, there was abundant desquamation. On the sixth day the temperature ranged between 38.5° and 40° C. (101.3° and 104° F.), and the general condition was poor. The tongue was dry; the pulse 100 to 130, small and irregular; the liver, of normal size, but tender. The urinary output was 1200 c.c. daily. After this condition had persisted for nine days,

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i.e., fifteen days after the injection, coma supervened, with pronounced dyspnea, and death occurred. No autopsy could be made. The liver was apparently at fault in this case, and the last dose of neosalvarsan perhaps too large, though many surgeons administer this amount. G. Lévy (Annales des maladies vénériennes, October, 1912).

OPHTHALMIC INJURIES, SOME POINTS IN THE TREATMENT OF.

Simple scrapes or abrasions of the cornea, with or without the presence of any foreign body, should be carefully looked after because of the danger of infection. The conjunctival sac should be thoroughly cleansed by irrigation with normal saline or boric acid solution. Argyrol should be dropped into the eye and the sac filled with some sterilized medium such as bichloride petrolatum, 1 to 3000, and a dressing consisting of a sterilized pad of gauze applied. The bichloride petrolatum is made from 1 grain of bichloride of mercury, 5 grains of sodium chloride, and 6 ounces of the excipient. The bichloride and salt are dissolved in a few drops of water or alcohol and thoroughly incorporated with the petrolatum.

In twenty-four hours the epithelium of the cornea is regenerated and the danger of infection is past.

If the cornea is already infected and an ulcer has developed, it should be sterilized by an application of phenol, and the excess neutralized with alcohol; or the infected area can be touched lightly with the actual cautery, using a platinum probe heated to a red heat, and the same treatment applied as is described above.

In burns of the conjunctiva and cornea from lime or hot metal, no occlusive dressing should be applied. The eye should be filled with sterile petrolatum and left open, the eyeball and lids being moved frequently to prevent adhesions which would surely follow if the eye were bandaged.

In wounds of the cornea, the eye should be thoroughly cleansed, any projecting iris cut off, atropine and argyrol dropped in, and the same sterile dressing applied.

If the sclera is wounded, the conjunctiva should be drawn over the wound and stitched together to protect the contents of the eyeball. In many cases one may also cover wounds of the cornea with a conjunctival flap by the Kuhnt method.

Where a foreign body has entered the eye, it should never be probed for. If there is so much blood or effusion in the vitreous as to prevent locating the foreign body with the ophthalmoscope, the X-ray localizer should be resorted to. If it is a magnetic body, it can in most instances be removed with the magnet, either through the entrance wound or through an opening made in the sclera. If it is not a magnetic body, the eye has to be removed in most instances. Joseph A. White (International Journal of Surgery, December, 1912).

PYELONEPHRITIS IN PREGNANCY AND PUERPERIUM, TREATMENT OF.

Absolute rest in bed is essential in the treatment of this affection. Elevation of the affected kidney, either by placing the patient in the lateroprone or semirecumbent position, favors drainage. A small, firm pillow may be placed beneath the loin on the sound side to increase further the freedom of the process. Morphine or codeine should be given to control the pain, hypodermically if there is much vomiting. Thorough catharsis by calomel and salines is

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essential, and this early. An ice-cap to the loin often gives relief. There should be forced administration of cream-of-tartar water and sweating should be promoted. Milk, skimmed if there is much digestive disturbance, or lactone buttermilk, should constitute the diet. Hexamethylenamine in 5- to 10- grain (0.3 to 0.6 Gm.) doses at three- or four- hour intervals is the most valuable antiseptic. Lithium citrate in 10-grain doses enhances its effect. These may be replaced after forty-eight hours by sodium benzoate in 10-grain doses every two hours until the patient complains of a burning sensation in the region of the kidneys, when the first combination is resumed. Kastner recommends potassium citrate up to 40 grains (2.6 Gm.) a day in combination with the hexamethylenamine. Other substances advised have been potassium iodide and phenyl salicylate. Pilcher has instilled 1 dram (4 c.c.) of 25 per cent. argyrol into the pelvis in 6 cases with good results, but advises this treatment only in cases persisting more than ten days. Autogenous vaccines in colon-bacillus infections have been successful. An initial dose of 30 to 50 million is given and repeated once a week. Obstetrical interference is seldom necessary, but persistent cases late in pregnancy should be delivered. When definite signs of a surgical kidney are present, nephrotomy for drainage of the organ should be performed. J. W. O'Connor (Boston Medical and Surgical Journal, November 7, 1912).

RECTUM, OPERATIONS UPON, LOCAL ANESTHESIA IN.

Ethyl chloride spray can be used in thrombotic hemorrhoids, when external to the sphincter muscle, and in opening abscesses or furuncles on the buttocks or about the anus, but it is not practicable in conditions within the rectum or above the anal or sphincteric margin.

Betaeucaine solution can be used in all rectal conditions, but should be employed in 1/8 per cent. or 1/10 per cent. solutions; although it is less toxic than cocaine, it may produce toxic effects on the patient within five or ten minutes after the operation. Cocaine should never be used in rectal operations in a solution stronger than 1/8 per cent. or 1/10 per cent., toxic symptoms showing themselves more frequently and sooner when cocaine is used about the rectum than in any other part of the body. When using cocaine or betaeucaine solution for local anesthesia, it is wise to insert a rectal suppository of morphine sulphate, gr. 1/4 (0.015 Gm.) before the operation, or to give a hypodermic injection of morphine sulphate, gr. 1/4, immediately after the operation, to control the severe pain which invariably follows.

Sterile water, while producing some pain during infiltration owing to the distention induced, gives no pain during or after operation. While it is to be preferred in mucous membrane operations where the pain is almost *nil*, owing to scanty nerve-supply, it is not as feasible in skin work.

Quinine and urea hydrochloride solution is the anesthetic of choice in rectal operations. A 1 per cent. solution should be used in mucous membrane work where sloughing followed by scar-tissue formation is desired, and a 1/4 per cent. or 1/3 per cent. solution in skin work. With stronger solutions than the latter in skin work primary union of the tissues will not be obtained. Quinine and urea hydrochloride solution produces anesthesia in from three to twenty minutes, but the anesthetic effect lasts for a period of from three to ten days.

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a sufficient length of time to allow wounds resulting from ordinary rectal operations to heal perfectly. J. F. Saphir (American Medicine, February, 1913).

SILICIC ACID IN CANCER.

In 1910 the author conducted experiments bearing on the action of silicic acid in mouse cancer, and observed that this compound exerted a preventive influence in the development of malignant growths in these animals. Silicic acid also has a favorable action on syphilis of the nervous system. The author advises its administration to prevent recurrences after operations for cancer. He prescribes the acid in daily doses of 0.01 to 0.02 Gm. (⅙ to ⅓ grain). In cases of cancer of the digestive apparatus, not more than a few milligrams should be given daily. M. Benedikt (Society of Physicians of Vienna; Semaine médicale, March 12, 1913).

TOXEMIA OF PREGNANCY, TREATMENT OF.

In a number of cases of toxemia of pregnancy, 4 of them severe, free administration of oxygen was tried by the author, with asserted good results. Improvement and eventual recovery were noted in all the patients, and in one the relief afforded was so prompt and complete that it seemed difficult to ascribe it to mere coincidence. The author suggests that oxygen, either by inhalation or subcutaneously, be freely used in these cases. The measure will be found subjectively agreeable to the patient, and does not conflict with milk diet, catharsis, hydrotherapeusis, and other curative agents of proved efficiency in this affection. G. P. Shears (Medical Record, January 11, 1913).

URETHRITIS IN GENERAL PARALYSIS AND ITS TREATMENT.

There is evidence, the author affirms, to show that chronic urethritis plays some part in aiding the development of general paralysis. A histological examination of the urethra was made by him in the cases of 16 male paralytics and 12 male non-paralytics. Of the 23 cases showing signs of urethral disease, 7 paralytics and 3 non-paralytics were slightly involved, 6 paralytics and 3 others had well-marked lesions, 3 paralytics and 1 non-paralytic very marked lesions. The paralytics all gave some evidence of urethritis, and, in more than half, the condition was well marked.

There are several indications, other than pathological, of urethral lesions in paralytics. The frequency with which catheterization is necessary is one, though muscular weakness is usually the primary cause. The usual occurrence is for distention to be noted, and then when the catheter is passed narrowing of the urethra found. The actual presence of a urethral discharge is not so common, though more frequent than in other cases of the same age.

During the last year hexamethylenamine was administered to male paralytics in the dosage of 10 grains (0.6 Gm.) thrice daily. Its effect in preventing retention of urine and the necessity for catheterization was striking. In 1909, of 20 male paralytics, 6, or 20 per cent., required the catheter on fourteen occasions. In 1910 the numbers were 4 of 36 on nine occasions, or 11 per cent.; in 1911, 8 of 43 on twenty-four occasions, or 18.5 per cent.; in 1912, until the end of May, no cases out of 32. The administration of the drug also seemed to prolong the lives of the patients, and, to a less extent, diminish the number of seizures. Harvey Baird (Jour. Mental Science, January, 1913).

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Clinical Summary

Practical hints from articles and abstracts that have appeared in the Monthly Cyclopedia and Medical Bulletin during the current year.

Albuminuria. TREATMENT. Prophylactic doses of Roux's antidiphtheritic serum in 128 cases of scarlet fever found to lower greatly frequency of albuminuria in these cases. Anaphylactic effects extremely rare with this serum. In all cases of albuminuria originating from throat inflammation, as well as in albuminuria in general where other measures have proven ineffective, the serum should be given hypodermically in doses of 10 c.c. (2½ drams) every three or four days. *Galliot.* Page 36

Anal Fissure. TREATMENT. Conservative measures advocated in painful fissure. In examining for it have patient bear down, or blow in some orthoform. In treatment: 1. Apply thigenol on cotton on end of probe, which is then withdrawn, leaving cotton in position. 2. Patient to drink tumblerful of hot water an hour before breakfast, and another, either hot or cold, in evening. 3. To insure softness of motions: Tincture of cochineal and peppermint oil, of each, ♏x (0.6 c.c.); syrup of glycerin, 3j (4 c.c.); soft paraffin, ℥j (31 Gm.). If this objectionable, add 20 grains (1.3 Gm.) of powdered cocoa, or 10 to 20 grains of powdered agar. Dose of the mixture, 1 teaspoonful 4 times daily. 4. Where constipation previously present: Some aperient, such as confection of senna, ℥ss-j (2-4 c.c.), to be given in addition. 5. After bowels act: Patient to wash parts and apply some bland ointment, *e.g.*, one of eucalyptus. 6. Where violent sphincteric spasm and pain, dilate under gas, and, if sentinel pile present, remove with forceps. *Baldwin.* 109

Anemia. TREATMENT. Administration of olive oil and glycerin, equal parts, in gradually increasing doses two hours after each meal considered a valuable measure. *Bram.* 47

Appendicitis, Acute. TREATMENT. After operation in children: 1. Give warm saline solution by rectum, 8 to 10 ounces every two or four hours; administer slowly with catheter and funnel. 2. Feed with a decoction of crushed raisins, alternated with albumin water. 3. Open bowels as soon as possible. If no normal movement within twenty-four hours, give glycerin enema; use syrup of senna as routine aperient. *Stiven.* 37

Arthritis, Chronic. TREATMENT. Certain joint cases, rebellious to all other treatment, can be arrested by proper diet combined with colonic lavage. Breakfast: Cereal, small amount; toast with butter; imitation cereal coffee. Between breakfast and lunch: Buttermilk, 2 glasses; water, 1 glass. Lunch: Clear soup (or lettuce or spinach); 1 roast potato; 2 slices toast; imitation coffee. Between lunch and dnner: Buttermilk, 1 glass; water, 1 glass. Dinner: Clear soup (or twice a week small amount roast chicken, or 1 egg); toast or lettuce; imitation coffee; apple sauce. Between dinner and bedtime: Buttermilk and water. Daily simple enema followed by high colonic lavage with about 1½ quarts normal saline solution, until washings return fairly clear. Adapt diet to individual caloric needs and with constant regard to weight. *Pemberton.* 45

Asthma, Bronchial. TREATMENT. 1. When patient first seen during an attack, give 10 grains (0.6 Gm.) of blue mass or an equivalent amount of calomel with soda, followed by salts next morning. 2. Morphine and atropine injection, only if patient suffering intensely. 3. Sodium iodate, gr. iv-v (0.25-0.3 Gm.) every four to six hours, in capsules, given with food (contraindicated in the tuberculous, especially if hemoptysis). 4. Repeat mercurial purge if attack not markedly better in twenty-four hours. 5. Diet. During attacks: Broths every two to four hours. In intervals between attacks: Enough plain, coarse food to satisfy hunger and no more. Soups, clear of fat; fresh fish; raw oysters or clams; tender and lean meats; all vegetables except onions, cabbage, cucumbers, corn on cob; potatoes, peas, and beans only sparingly; only well-baked or toasted bread; rice, cereals, and eggs in moderation; no raw fruits; pastry, sweets, and any articles found by experience to disagree to be avoided. Careful scrutiny of patient's selection of foods required. Heaviest meal to be taken at noon; light supper. *Oettinger.* 37

Theobromine sodium salicylate (diuretin) found to do good in many cases. Often it is sufficient to give 15 to 30 grains (1 to 2 Gm.) before time of expected paroxysm. The product can be taken for weeks without harm. *Meyer and Cahn.* 179

Bronchopneumonia. TREATMENT. Creosote carbonate recommended for use in bronchopneumonia and obstinate chronic bronchitis in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first three years; in fifth and sixth years, 20 drops (2 Gm.). *Hunäns.* 162

Carcinoma, Esophageal. TREATMENT. Hydrogen dioxide, 1 dessertspoonful of 1 to 3 per cent. solution every hour, found to be valuable palliative measure where stenosis apparently complete. Within twenty-four hours stenosis is overcome, and later purées and even solid food can be swallowed. Sub-

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jective symptoms disappear and patients gain in weight. Measure of little use, however, in scirrhous form of cancer. *Fradiss.* Page 109

Cardiovascular Disease. TREATMENT. Ideal diet in presence of impaired circulation consists essentially of bread and butter, with some milk to supply fluid, and enough cheese to make up protein requirements; fruits and vegetables to be added in moderate amount. *Bishop.* 108

Chorea. TREATMENT. Twenty-five cases, in children of 8 to 19 years, in which abnormal movements rapidly disappeared after 3 or 4 intravenous injections of 0.2 to 0.35 Gm. of salvarsan, given weekly. Recovery regularly after three or four weeks. General condition also always greatly ameliorated. *Marie and Chatelin.* 38

Constipation. TREATMENT. Stubborn constipation in infants is relieved by giving 1 dram (4 c.c.) of olive oil once or twice daily. Constipation in neurasthenics is also benefited. *Bram.* 47

Diabetes Mellitus. TREATMENT. For first two weeks restrict to careful antidiabetic diet, unless sugar in urine practically disappears in less time. Then cautiously increase carbohydrates, always warning patient of danger of overeating *permissible* articles. Should sugar persist, put to bed and restrict to 1 raw egg and 2 ounces of olive oil 3 or 4 times a day. Continue free use of a mildly alkaline drinking water. If any acidosis symptoms result, decrease amount of oil and give small quantities of carbohydrates. Proper mastication an important detail in treatment. For constipation, use: Olive oil, castor oil, glycerin, of each, 160 parts; gum arabic, 18; flavoring (oil of cassia or gaultheria), 0.5. Best diabetic flour is: Unadulterated soy-bean flour, 350 parts; unground poppy seed, 30; eggs, 250; pure baking powder, 15; water, 340. *Hodgson.* 39

Dupuytren's Contraction. TREATMENT. Thyroid substance continuously administered in doses of 0.1 Gm. (1½ grains) found markedly beneficial in 5 cases. *Gilbert.* 173

Dysentery. TREATMENT. Measures useful in form of dysentery sometimes epidemic in institutions discussed. 1. Isolate patient and put to bed. 2. Give calomel, 1 grain (0.06 Gm.), followed in two hours by mixture of dilute sulphuric acid, ℥iij (12 c.c.); compound tincture of cardamom, ℥j (30 c.c.), in water, enough to make ℥viij (250 c.c.); ℥j every two hours during the disease. 3. Olive oil, 1 tablespoonful every two hours; no other food. 4. Boiled water at frequent intervals. 5. In the aged, debilitated or arteriosclerotic, 1 teaspoonful of brandy every three hours. *Jones.* 163

Edema of Extremities. TREATMENT. Where edema of legs resisted all measures, especially where incision not permitted, good results obtained from local use of hypertonic saline solutions—25 to 50 Gm. (¾ to 1½ ounces) of sodium chloride to 1 liter (quart) of distilled water. Soak gauze compresses lightly in this, wrap around legs, and cover with thick layer of absorbent cotton, held in place by bandages. Leave dressing on overnight. Equally good results in edemas due to broken compensation, Bright's disease, etc. *Pathault.* 40

Epistaxis. TREATMENT. With patient sitting in chair, stand behind him, place index fingers of both hands beneath body of lower jaw on each side, with thumbs resting behind angles, and make gentle traction upward upon head, and simultaneously extend it backward as far as patient can comfortably bear. Sets up artificial anemia in nose and head in general, causing epistaxis to cease. Desist in one or two minutes, or consciousness may be partly or wholly lost. *Ritschl.* 165

Fibroid Phthisis. TREATMENT. Where profuse expectoration of pus, creosote often best remedy. Dose, 3 to 5 drops (0.18 to 0.3 c.c.) three times daily, given over a long period. Creosote carbonate more easily tolerated; dose, 15 to 25 drops (0.9 to 1.5 c.c.) per day. *Fishberg.* 180

Filariasis. TREATMENT. Case of pronounced elephantiasis of lower extremities in which two intravenous injections of 0.6 Gm. of salvarsan caused disappearance of filariæ from blood and great reduction in size of limbs, weight falling from 400 to 244 lbs. *Barnes.* 1

Fracture of Forearm. TREATMENT. To correct overriding of fragments, attach to hand, anteriorly and posteriorly, as separate straps, zinc oxide adhesive plasters 2½ inches in width, reading from above wrist to 6 inches beyond extended fingers, and fixed above wrist and about knuckles with encircling strips. Apply usual splint dressing and also a plaster-of-Paris encasing bandage, including hand and lower arm. When this firm, include beneath enveloped forearm, by more turns of plaster bandage, a light, flat wooden splint projecting 1 or 2 inches beyond extended fingers. To a cross-piece at end of this, projecting an inch, attach the double adhesive strap from hand with tacks, thus keeping bony fragments from overriding. *Miel.* 165

Fracture of Hip, Intracapsular. TREATMENT. Longitudinal traction alone often unsatisfactory in results. Longitudinal combined with lateral traction, however, or wide abduction in plaster of Paris, usually gives serviceable limb. Former far easier to apply and the more suitable the older the patient. Plaster-cast method requires much skill in application, and is better adapted to young patients. *Davis.* 41

Gastric Ulcer. TREATMENT. Best preparation of bismuth to use is the subnitrate precipitated from a boiling-hot mixture. Cleanse stomach in morning with 150 c.c. (5 ounces) of Carlsbad or Vichy water, and

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three-quarter to one hour later give 10 to 20 Gm. (2½ to 5 drams) of bismuth subnitrate suspended in tumblerful of warm water. Administer daily, and increase or reduce dose, or discontinue, more or less rapidly, according to clinical course (Fleiner). Another method is to give same doses of bismuth finely suspended in oil, several times daily. Stepp recommends following bismuth suspension: Bismuthi subnitratis, gr. xlv (3 Gm.); chloroformi, ♏xv (1 c.c.); aquæ destillatæ, 5 fluidounces (150 c.c.); 1 to 2 tablespoonfuls to be taken hourly for several weeks. *Aaron.* Page 42

1. Absolute rest in bed. 2. No food for five to seven days. 3. Morphine hypodermically, until hemorrhage has ceased. 4. Ice-pack on abdomen, or hot applications in absense of hemorrhage. 5. Move bowels by enema, if necessary; where no hemorrhage, give citrate of magnesia or Carlsbad salts. 6. Bismuth subnitrate in 30-grain (2 Gm.) doses, with magnesium hydrogen dioxide (25 per cent.) in 7½-grain (0.5 Gm.) doses three times daily. Give boiled water if necessary to insure retention of these drugs. 7. Rectal alimentation, giving 500 c.c. (1 pint) of 10 per cent. dextrose solution at body temperature every six hours, by Murphy drop method. 8. Return to mouth feeding as soon as possible, according patient's condition, beginning with small doses of albumin water several times daily. *Gompertz.* 139

Hemoptysis. TREATMENT. Subcutaneous injection of 40 c.c. of sterile gelatin solution recommended. Causes in twenty-four hours rise in viscosity of blood by 1.4 of original value. *Cmunt.* 110

To prevent onset of hemoptysis where sense of tightness in chest or sputum blood-streaked: 1. Absolute rest. 2. Nitroglycerin solution, ♏xv (1 c.c.), or sodium nitrite, gr. xv (1 Gm.), in ℥ij (60 c.c.) of water; ℥j (4 c.c.) every four hours for two or three days.—Where actual hemorrhage: 1. Put to bed in comfortable position. 2. Reassure patient. 3. Amyl nitrite inhalation. 4. Atropine, gr. 1/50 (0.0012 Gm.) hypodermically, to be repeated 2 or 3 times in next twenty-four hours. 5. Or, nitroglycerin, gr. 1/100 (0.0006 Gm.) hypodermically, at first every half-hour for 3 or 4 doses, later less often; followed by sodium nitrite, gr. j (0.06 Gm.) every three or four hours. 6. Where excessive nervous irritability, or cough troublesome: Morphine. 7. In abundant hemorrhages: Apply bandages to middle of arms and thighs. 8. Epinephrin hydrochloride, 5 drops of 1: 1000 solution, or suprarenal substance, 3 grains (0.18 Gm.), every three or four hours; or pituitary extract, injected subcutaneously. *Frazer.* 111

Hemorrhoids. TREATMENT. Olive oil a good demulcent laxative in hemorrhoids and anal fissure. *Bram.* 47

Where not much inflammation or hemorrhage, following ointment advisable: Cerati, olei amygdalæ expressi, zinci oxidi, of each ℥iiss (10 Gm.); balsami Peruviani, gtt. iij. Piece of this of size of hazelnut to be introduced high up through anus morning and evening, and especially before stool. Where much hemorrhage, following may be used: Chrysarobini, gr. xij (0.8 Gm.); iodoformi, gr. v (0.3 Gm.); extracti belladonnæ fol., gr. x (0.6 Gm.); petrolati, ℥j (30 Gm.). Hot water or antipyrin in powder or 2 per cent. solution equally effective and less irritating. Where intense itching: Aluminis, gr. xv (1 Gm.); camphoræ, gr. xij (0.75 Gm.); adipis benzoinati, ℥j (30 Gm.). Where much moisture and also itching, 10 per cent. bismuth subsalicylate powder useful. If much congestion, use: Bismuthi subsalicylatis, zinci oxidi, of each gr. lxxv (5 Gm.); talci, ℥iij (90 Gm.). In voluminous, readily prolapsing or bleeding hemorrhoids, an injection of olive oil should be taken every evening before retiring. *Plicque.* 166

Hernia. TREATMENT. Use of a mixture of 3 parts of hyoscine and 2 of atropine advised to facilitate reduction of incarcerated hernia. Inject 1/1000 grain (0.00006 Gm.) every five to twenty minutes until desired effect obtained. Full dose for adult males is 1/100 grain (0.0006 Gm.). *Waugh.* 167

Hyperchlorhydria. TREATMENT. Where patient constipated at beginning of treatment, give suspension of magnesia and bismuth just after and again one and a half hours after meals; each dose to represent 6 grains (0.4 Gm.) of magnesium hydroxide and 22 grains (1.5 Gm.) of bismuth subnitrate. Continue for three to five days, and, if evacuations still too frequent, use instead a powder containing equal *volumes* of magnesium oxide and magnesium carbonate, with a little powdered charcoal and sometimes bismuth. Less magnesium oxide should always be prescribed than is capable of neutralizing completely all the acid present. *Tupper.* 167

Ileocolitis, Infantile. TREATMENT. In "putrefactive diarrhea" of infants, all irritating found should be avoided as, by causing increased mucous flow, it favors bacterial pullulation. Use of proteid of cows' milk, obtained by removing whey from skimmed milk with chymogen or pepsin, advisable. Break up curd into fine particles and suspend in 5 per cent. gelatin water, to be heated before administration. After four or five days to a week replace gelatin water partly by buttermilk, and skimmed-milk curds by whole-milk curds, gradually getting child on albumin-milk and finally on whole-milk mixture. *Grulee.* 168

Impetigo Contagiosa. TREATMENT. Remove all crusts, wash raw surfaces with bichloride solution, make a fresh paste by adding a few drops of mercury bichloride and ammonium chloride solution (1: 2000) to small quantity of zinc oxide, and apply to irritated places twice daily. *Hiden.* 182

Influenza. TREATMENT. Care to secure proper ventilation, alimentation, and elimination necessary. Local treatment of air pas-

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sages important, to destroy causative bacillus. In the morning: 1. Cleanse nose and throat with spray of Dobell's solution or 1: 400 phenol solution at 85° to 90° F. 2. Swab with: Balsam of Peru, gr. x (0.6 Gm.); ichthyol, gr. v (0.3 Gm.); glycerin, q. s. ad f℥ij (60 c.c.). In the evening: 1. Repeat spray. 2. Have patient inhale for one-half hour creosote, 8 c.c. to quart of water. 3. Swab nose and throat with epinephrin solution. 4. Fifteen minutes later swab with argyrol, 10 per cent. Hydrotherapy of value in chronic cases. In severe chronic cases, sojourn in an even and sunshiny, but not tropical or subtropical, climate desirable. *Jones.* Page 111

Iritis. TREATMENT. Sinus infection considered responsible for many cases of intraocular inflammation. Following treatment used with good results in 26 cases of iritis and 5 of idiopathic retinochoroiditis: Saturate tampon, of such size as to fit snugly between middle turbinate and septum and extend from exterior portion of nose to sinus posteriorly, with aqueous argyrol solution (gr. xl-℥j) and introduce. This will drain ethmoid and other sinuses. To drain antrum, place tampons under scroll of middle turbinate and above upper part of inferior turbinate. Allow to remain twenty minutes to one hour. *Manning.* 112

Lead Poisoning. TREATMENT. Obstinate lead colic relieved and constipation overcome by giving a tumblerful of olive oil once daily. *Bram.* 47

Leprosy. TREATMENT. Salvarsan used in 5 cases. Caused clinical improvement, cases showing partial or complete resolution of nodules of tissue examined. Effect is not specific or permanent. *Wellman.* 114

Leukemia. TREATMENT. Benzol (benzene) used in 6 cases of myeloid leukemia and 1 of Hodgkin's disease with good results. Given in capsules each containing 0.5 Gm. (8 minims), with same amount of olive oil; at first, 4 capsules daily, after meals, then 2 capsules 3 times daily, later 4 times, and finally 5 times. Leucocyte count gradually lowered to normal, fever disappears, and general condition improved. Effectual where other measures, including X-rays, have failed. *Kiralyfi.* 114

Marasmus. TREATMENT. Large series of infants with marasmus, congenital or acquired, and premature infants, treated with marked success by external application of codliver oil. Wrap child in oil-soaked flannel from armpits to iliac crests, and cover with oiled silk. Remove flannel, wash skin with soap and water, and reapply flannel, at twelve-hour intervals. Give only water by mouth, in ample quantity. Treatment causes rise in temperature, loss of dryness and wrinkles of skin, and an increase in weight, often considerable. Feed by mouth only when temperature has been normal for a number of days and skin shows increase in fat and water content. *Gray.* 114

Nephritis, Acute. TREATMENT. Saline proctoclysis advised in acute nephritis in children. Tends to relieve edema and subjective symptoms and improve condition of urine. Normal salt solution, kept at about 110° F. by hot-water bottles surrounding graduated container, passed into rectum through soft-rubber catheter, which is inserted about 6 to 8 inches after a cleansing enema. Procedure also useful in acute infectious diseases and toxemic diseases, as well as before and after ether anesthesia. *Lowenburg.* 171

Nevi. TREATMENT. Use of radium advised. Skin should first be broken over lesion, even if only by lightest electrolysis, to permit of rapid action and therefore small dosage of radium salt. Eradication without scarring. *De Courmelles.* 172

Otitis Media. TREATMENT. Where discharge copious, syringe ear gently but thoroughly 2 or 3 times daily with saturated boric acid solution, or, better, mercury bichloride solution, 1: 8000, sometimes later 1: 4000. Where discharge scanty, first cleanse ear with cotton mop, or if acute stage of attack passed drive out discharge by Valsalva method or Politzer bag and wipe out again. Then have patient incline head and pour in bichloride solution, allow to remain ten minutes, dry ear, not very thoroughly, and plug meatus with absorbent cotton. Do this not oftener than once daily. Exceptionally, especially where there is extensive destruction of drumhead, insufflation of boric acid, or of boric acid and aristol or zinc oxide, equal parts, proves more efficacious than the mercury solution. *Theobald.* 116

Pediculosis Capitis. TREATMENT. Lay patient on back on bed with head over edge, hair lying in a basin beneath head on a chair. Pour 1: 40 phenol solution over hair into basin and sluice backward and forward until hair thoroughly soaked, especially over ears and at nape of neck. Continue sluicing ten minutes, then lift hair from basin and allow to drain, without drying it. Then swathe head with thick towel or large piece of flannel and allow to remain for an hour. Finally wash hair or simply allow to dry. Method entirely safe with children of 5 years and over. Hair not damaged. *Whitfield.* 173

Pellagra. TREATMENT. Gelsemium followed by much improvement in 5 cases. Fluidextract, 3 or 4 drops every four hours, given. Discontinue drug if ptosis or diplopia occurs. *Blosser.* 174

Pneumonia, Lobar. TREATMENT. Sodium citrate internally found in most cases, especially in children, to cause fall in temperature, pulse, and respiration to normal within twenty-four hours; process in lung clears up soon after, third stage being apparently escaped. Administered in doses of 30 to 40 grains (2 to 2.6 Gm.) in adults every two hours, with a little citric acid or in lemonade. Dose for children to be calculated from 40-grain dose in adults. Drug

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to be continued till clearing up of process in lung complete. Active catharsis to be established at beginning of treatment. Sodium chloride should be supplied to system in about the normal daily amount (240 grains, or 16 Gm.), with the diet or otherwise. *Weaver.* Page 116

Administration of calcium chloride in 10-grain (0.6 Gm.) doses every four hours advised, from outset until three days after defervescence. Patients given it seem to do better than others. *Cornwall.* 175

Creosote carbonate observed to lower temperature considerably and diminish somnolence or delirium in pneumonic processes in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first 3 years; in fifth and sixth years, 20 drops (2 Gm.) and in seventh to tenth years, 25 to 30 drops (2.5 to 3 Gm.). Administered readily in a spoonful of warm milk. To be continued in ½ doses for a week after auscultatory signs have disappeared. *Hunäns.* 162

Poisoning by Illuminating Gas. TREATMENT. I. First stage, preceding loss of consciousness: 1. Fresh air. 2. Aromatic spirit of ammonia. 3. Effervescent sodium phosphate, to produce eructations and relieve nausea. 4. Oxygen inhalation. 5. Analgesics for headache. 6. Avoidance of violent exertion.—II. Second stage, patient unconscious, but breathing: 1. Howard artificial respiration, rhythmic compression of lower thorax, to assist breathing. 2. Oxygen, preferably under pressure. 3. Camphor, caffeine, digitalis, and strychnine hypodermically. 4. External heat, if indicated. 5. Massage of muscles after aërating lungs. 6. Treatment to be conducted in warm room. 7. If not prompt recovery, venesection and normal saline infusion, or use of "pulmotor."—III. Third stage, patient unconscious and not breathing: 1. Same measures as in preceding stage. 2. Blood transfusion. 3. Artificial respiration by Schäfer method, patient prone. *McCombs.* 44

Prurigo. TREATMENT. 1. Good hygiene. 2. Generous diet. 3. Codliver oil. 4. To control itching: Baths with starch, sulphurated potash, or creolin; tar, pure or mixed with olive or codliver oil; codliver oil ointment, with betanaphthol or phenol added. 5. To dissipate any coexisting eruption: Sulphur, in soap, solution of potassium sulphide, or thermal waters; codliver oil, covered with bandage and impermeable varnish; codliver oil, 3 parts, and white wax, 1, used as pomade, with or without covering; alternate injections of phenol and pilocarpine; X-rays; thyroidin. 6. In rebellious and severe cases: Soap patient in warm bath and apply a tar preparation or Vleminckx's solution. 7. In stage of lichenification: Radium. *Morris.* 50

Psoriasis. TREATMENT. Potassium permanganate, 2 tablespoonfuls of a saturated solution added to a warm bath, recommended for acute universal psoriasis. After soaking in this for ten or fifteen minutes, patient to dry himself thoroughly and apply following lotion: Amyli, talci, of each, 40 parts; glycerini, 20 parts; acaciæ, 1 part; liq. plumbi subacetatis, 4 parts; liq. picis carbonis, 26.5 parts; aquæ, 200 parts. Tar baths, preparing by adding 1 or 2 glasses (℥viij or xvj) of an emulsion of coaltar, also excellent, though a tar salve, rubbed in after a bath, is often better. Following paste found efficient in some obstinate old patches: Acidi salicylici, 10 parts; chrysarobini, olei rusci, of each, 20 parts; saponis viridis, adipis lanæ hydrosi, of each, 25 parts. Cover with oiled silk. A lotion of 1 part of lead subacetate solution to 5 of liquor picis carbonis, diluted ℥j-Oj, may be used to envelop the part, covered with oil-silk, and allowed to remain all night. *Montgomery.* 175

Scalp Wounds. TREATMENT. Shave scalp for some distance around wound, either dry or wet with alcohol; after area dried, paint with tincture of iodine and wash off surplus with alcohol. In suturing use figure 8 sutures, not too tight. Where parts badly torn, provide free drainage; stitches not to be too close together. In all fractures of skull give 40 to 60 grains (2.6 to 4 Gm.) of hexamethylenamine daily. *Harper.* 119

Sinus Suppuration, Acute. TREATMENT. Apply 4 per cent. cocaine solution on cotton applicator, passed between end of middle turbinate and nasal wall. Follow by a cleansing alkaline solution and an oily spray containing menthol. To reduce pain and promote drainage: Hot, moist applications over whole face. Salicylic preparations, acetphenetidin, and quinine, to be used as indicated. Free catharsis. Irrigation of frontal or maxillary sinuses unnecessary unless there is trouble in antrum traceable to carious tooth. Vacuum treatment by negative air-pressure often useful. *Lemere.* 176

Syphilis. TREATMENT. Following plan advised: Intravenous salvarsan injection, immediately followed by series (12 to 15) of intramuscular mercury salicylate injections, and later by 4 to 6 intramuscular injections of small doses (0.1 to 0.2 Gm.) of salvarsan in sesame oil. After this start new series of mercury salicylate injections, to be continued at increasing intervals during first year of disease. A number of the cases thus treated appeared to be cured. *Eisenstaedt.* 53

Immediate tolerance to neosalvarsan is greater than to salvarsan, but this does not warrant use of relatively larger doses of former. Neosalvarsan to be preferred to salvarsan where latter badly borne and in cases of tabes, paresis, arteriosclerosis, cardiac disease, *i.e.*, in all patients in whom too marked a reaction is to be avoided and where only small doses are indicated. *Bayet.* 115

Tabes Dorsalis. DIAGNOSIS. Spontaneous fractures not infrequently an initial or early symptom of tabes. *Taylor.* 54

Talipes Equinovarus. TREATMENT. Immediately after birth place strip of zinc oxide

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adhesive plaster over sole and inner aspect of foot, over correct position of latter, and draw plaster tightly along outer aspect of leg. Place second strip over sole just posterior to base of metatarsals, extending over inner aspect of foot and ending over joint of great toe. Draw firmly, apply to outer side of leg 1 to 2½ inches above external malleolus, and wrap around leg in ascending spiral. Place further strips to cover and tighten the second tension strip, beginning on leg 2 inches above ankle and overlapping until instep reached. Renew dressing, after cleansing foot with ether and alcohol, ten days or two weeks later. Deformity will be corrected in 6 or 8 weeks. Leave foot with stiff-ankle infant-shoe, with 1 strip of adhesive on outer side of foot and leg. *Allen.* Page 178

Tuberculosis, Articular. TREATMENT. Thyroid substance indicated in sluggish cases, especially if evidences of thyroid inactivity present. Dose should be only ⅙ to ½ grain (0.01 to 0.03 Gm.) *pro die*, and patient watched for tachycardia. *Lereboullet.* 179

Tuberculosis, Pulmonary. DIAGNOSIS. Value of percussion in earliest stage emphasized. With patient lying on back on couch, employ light percussion on terminal phalanx of a finger firmly pressed on spot under examination. Three characteristic dull areas on either side should be sought, which may all be present and of considerable size while apex is still very fairly resonant: 1. Opposite inner part of first intercostal space (percussing anteriorly) and inner part of suprascapular fossa (posteriorly). 2. Opposite outer part of same interspace, and outer part of suprascapular fossa. 3. In upper part of lower lobe, percussing posteriorly at end of spine of scapula, and anteriorly in second interspace. *Lees.* 54

Quantitative examination of albumin in sputum easily made and useful in diagnosis in doubtful cases. Technique as follows: To 20 c.c. of sputum as free from saliva as possible add a 3 per cent. acetic acid solution slowly, while agitating, until mucin is coagulated; add 2 parts of distilled water to sputum, shake well, filter through several layers of gauze, add a few drops of acetic acid solution, filter, and test filtrate for albumin by any ordinary test. If more than a trace present make quantitative test with Esbach's tube and multiply reading by 3 to get percentage. All active cases give positive reaction. *Works.* 117

TREATMENT. 1. Inhalation of following solution: Creosoti, phenolis, spiritus chloroformi, ana 3ij (8 c.c.); tincturæ iodi, spiritus ætheris, ana 3j (4 c.c.). Two Yeo inhalers to be used on alternate days, cleansed by immersion in boiling water and careful drying. Patient to pour 6 to 8 drops of solution on felt of inhaler *every hour* during daytime, and once or twice during night if awake. Petrolatum or lanolin cold cream to be smeared over nostrils and upper lip before use of inhaler at first. 2. Period of rest in bed at beginning of treatment. 3. Treat digestive disturbances. 4. Give a sufficiency of easily digested food; malted milk, dissolved in scalded whole milk, after each meal. 5. Careful disinfection of mouth 4 times daily, after the milk; antiseptic sprays for unhealthy conditions of fauces. Forty-eight complete recoveries in 70 cases thus treated. *Lees.* 54

Hydrotherapeutic measures, to be employed in 4 successive stages or steps, described: I. Ablution, beginning with water at 90° F., gradually reduced, by 2° daily until 60° F. reached; followed by drying and, if possible, exercise in open air. II. Affusion. With patient standing in water at 105° F., water at 85°, gradually reduced to 60°, is thrown over back and chest. III. Cold rub. With patient standing in water at 105°, a sheet is wrung out in water at 80°, gradually reduced to 50°, and actively rubbed till sheet warm. IV. Drip sheet. Same as last, with sheet dripping; patient rubbed and slapped for two minutes; water at 70° then poured over shoulders, and friction applied till sheet warm; same procedure rapidly repeated over other parts of body. *Baruch.* 56

Olive oil, ½ ounce (15 c.c.) two hours after each meal, increased weekly by ½ ounce up to 3 ounces, found to cause considerable gain in weight. *Bram.* 47

Sodium cinnamate subcutaneous injections found superior to cacodylates in all varieties of cases in which a general tonic effect required. Initial dose, contents of 5 c.c. (1¼ drain) ampoule, including 0.5 Gm. (⅝ grain) of the cinnamate; this to be rapidly increased by one-half, bulk of solution, however, being kept the same. Injections given daily. *Laborde.* 118

Counterirritation with mustard sometimes found very effective in night-cough. Soft capsules containing beechwood creosote, 1 minim (0.06 c.c.), oil of sandalwood, 5 minim (0.06 c.c.); oil of sandalwood, 5 grains (0.12 Gm.), given 4 or 5 times daily, may be of decided benefit for cough. *Gordon.* 119

Importance of hyperalimentation in cases of tuberculosis in pregnancy where it is decided not to empty uterus emphasized. Use of following mixture advised to increase appetite: Lysol, 1 part; ichthyol, 10 parts, and glycerin 20 parts. Begin with 1 drop and increase by 1 drop at each dose up to 30 drops, which is maintained. Preparation dropped into half tumblerful of water and taken just before meals. *Stewart.* 175

Four to 8 capsules, each containing 4 grains (0.25 Gm.) of liver substance, *pro die* found effective in arresting or preventing return of hemoptysis. In cases with low arterial tension and asthenia, epinephrin, 5 to 10 drops of 1:1000 solution daily for five to ten days, followed by like period of rest, or of adrenal substance, 1½ to 5 grains (0.1 to 0.3 Gm.) daily, is indicated. Bayle secures good results by administering 100 Gm. (3½ ounces) of fresh hog spleen every day. Loeper and

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Esmonet advise pancreatin, 2 to 4 Gm. (3ss-j) in keratin-coated capsules of 0.25 Gm. (4 grains) each, daily in first and second stage cases, and especially in patients with involvement of serous membranes; improves appetite and general condition. *Lereboullet.* Page 179

Sluggish, afebrile cases of tuberculosis, especially with profuse expectoration, are often greatly bnefited by creosote. *Fishberg.* 180

Typhoid Fever. TREATMENT. Olive oil useful as a food in 1- to 3- ounce (30 to 90 c.c.) doses 3 times daily. Also useful as a laxative; high injections of lukewarm oil may be given. *Bram.* 47

Collective statistics as to results of use of typhoid vaccines show 423 cases, with only 5.4 per cent. deaths. Dosage used by author: Initial hypodermic injection of 500,000,000, repeated at four-day intervals as long as required, and increased by 100,000,000 each time. Stock-vaccine injections made just under skin over insertion of deltoid or over tensor vaginæ femoris. *Callison.* 57

Series of 65 cases treated without milk, on diet consisting of broths, soups, gruels, gelatin, eggs, sugar of milk and butter. Gelatin given almost ad libitum—6 ounces of 5 per cent. solution, flavored with lemon, vanilla, etc., five times daily. Mortality low, persistent diarrhea only in 4 cases, hemorrhage in 4 and perforation in none. *Johnson and Watt.* 181

Urticaria. TREATMENT. Epinephrin given subcutaneously in doses of 8 minims (0.5 c.c.) in 6 cases. Two doses always caused complete fading of rash and cessation of itching in ten to twenty minutes. Recurrence probable in an hour or two unless treatment continued. *Swann.* 164

Vincent's Angina. TREATMENT. In mild cases, best results from use of trichloracetic acid. Membrane first removed by hydrogen peroxide and wiping with cotton swab; ulcer then anesthetized with 10 per cent. cocaine solution, and trichloracetic acid applied a few minutes after. Usually 3 or 4 applications at 2- or 3- day intervals necessary. Tincture of iodine preferable where ulceration extensive. For pain, orthoform. Carious teeth to be cared for. General condition also to be improved. *Halstead.* 58

Vomiting of Pregnancy, Pernicious. TREATMENT. Sodium bicarbonate, 5 to 50 grains (0.3 to 3 Gm.) a day, recommended. Part of it often vomited, but some retained. Continue for a week after vomiting stopped. Bowels to be well cleared by colonic flushing. Veronal also found useful. *Lyon.* 59

Whooping-cough. TREATMENT. Pertussis bacterin used in 40 cases. Disease not shortened, but bacterin causes, after preliminary slight aggravation, well-marked, and sometimes remarkable, symptomatic improvement in a certain proportion of cases. Best results produced at the height of the disease. Give 2 or 3 full doses—20 to 50 million bacteria each—at five-day intervals. In young infants moderate doses should be given early; they diminish severity of disease and minimize complications. *Zahorsky.* 48

Pertussis vaccine used in 17 cases. Best dose found to be 40 million bacteria, given in buttocks even to an infant twice a week, or in severe cases in old children, 3 times a week for one week only. If much benefit noted, intervals prolonged, and vice versa. Many cases improved after single dose. No reaction from injections, local or general. Vaccine should be used only in undoubted cases of the disease. The younger the infant, the more rapid the cure. *Scott.* 174

Wounds. TREATMENT. Treat all wounds on which great force has been exerted, and especially those contaminated by soil and dirt-covered objects, as if infected with gas bacilli. Leave open where possible and irrigate thoroughly with peroxide. Bandage lightly, if at all. Inspect frequently and irrigate often. On first sign or symptom of infection, take smear and examine for *B. aërogenes capsulatus.* Open wound freely, if sutured, and if on limb place latter in bath or irrigate continuously. If condition extensive, expose field widely to air by free incisions. (Do not employ peroxide in full strength or inject in confined spaces or directly under tissues.) *Cramp.* 42

Wounds of face and hands should be closed with subcuticular stitches, especially in women. To prevent subsequent stretching of scar, close superficial fascia with interrupted fine silk sutures before applying subcuticular stitches. After injuries to soft parts of hand, cleanse quickly by immersing in gasolene; after latter has evaporated, sterilize parts with tincture of iodine and alcohol. *Harper.* 119

Application, in gunshot wounds, of steaming towels wrung out in water as hot as can be borne, during thirty minutes night and morning before wound is dressed, recommended. To be continued till all inflammation subsides. *Griffith.* 110

Use of paste made by adding a few drops of mercury bichloride and ammonium chloride solution (1:2000) to small quantity of zinc oxide recommended for slight wounds, abrasions, injection punctures, indolent ulcers, sores about the face, etc. Where much stinging and itching about abrasions, substitute 2 per cent. phenol for bichloride. *Hiden.* 182

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CORRESPONDENCE.

To the Editors.

Dear Sirs:—

In the last number of the "Monthly Cyclopedia" on page 162 under the head "Philadelphia Medical Schools Adopt a Higher Standard," I note the following statement:—

"While the University and Temple University already possess fully equipped departments to teach biology, chemistry, physics, and a foreign language, the other schools named are to create such courses."

You may have overlooked the fact that we have had here in this college for the past three years at least, a thorough course in biology, and that physics and chemistry have been taught in the first year of the regular medical course for many years. Consequently, we also "already possess fully equipped departments to teach these subjects," and the new arrangement of the five-year course only means the placing of these subjects in the first year of that course instead of the first year of the four-year course, and in calling particular attention to the fact that the work in them will be fully equivalent to what is taught in the academic or scientific colleges.

Trusting that you will see fit to give us the credit due our school for this past work in the next number of the "Cyclopedia," and with best wishes, I am

Yours very sincerely,

Seneca Egbert,
Dean.

Department of Medicine, Medico-Chirurgical College of Philadelphia.
Philadelphia, March 28, 1913.

[The main feature we wished to emphasize was that *all* Philadelphia Medical Schools will comply with the new requirements. We notice, however, that no mention is made in Dean Egbert's letter of foreign language departments, which, on the other hand, are fully organized in Pennsylvania and Temple Universities. Doubtless, all Philadelphia Schools will meet this requirement before the next session.—Editors.]

ANNOUNCEMENT.

Testimonial Banquet to Dr. William J. Robinson.—Over two hundred physicians, writers, editors, and others prominent in the life of the city assembled at the Hotel St. Denis, New York, on March 7th, at the banquet tendered to Dr. William J. Robinson by his friends and admirers in recognition of his work as physician, editor, writer, lecturer, and publicist, and in celebration of the tenth anniversary of the foundation of *The Critic and Guide*. Dr. A. Jacobi acted as Toastmaster.

Book Reviews

Safeguarding the Special Senses. General Advice Regarding the Use and Preservation of the Eyes, Ears, Nose, and Throat. By Henry O. Reik, M.D., formerly Associate in Ophthalmology and Otology in the Johns Hopkins University, and Surgeon in the Baltimore Eye, Ear, and Throat Hospital, Baltimore, Maryland. Illustrated. Philadelphia: F. A. Davis Company, 1912.

This small book, written by one who has had extensive experience in the management of the various conditions affecting the different special-sense organs, contains much valuable advice for parents and others who have the welfare of children at stake. Each organ is considered in turn and the significance of most of the common, everyday symptoms is pointed out in non-medical terms with unusual clearness. The perusal of this small volume by parents and caretakers is heartily recommended.—R. B. S.

Diseases of the Mouth. For Physicians, Dentists, Medical and Dental Students. By Prof. Dr. F. Zinsser, Director of the Department of Dermatology at the City Hospital, Lindenburg; Dozent at the Academy for Practical Medicine, Cologne. Translated and Edited by John Bethune Stein, M.D., Professor of Physiology at the New York College of Dentistry; Late Instructor in Genito-Urinary Diseases at the College of Physicians and Surgeons. Octavo of 269 Pages, with 52 Colored Plates and 21 Black and White Illustrations. New York: Rebman Company, 1912. Cloth, $7.00, net.

The chief value of this work lies in its series of 52 colored illustrations, depicting various lesions of the mouth, chiefly syphilitic. As Prof. Zinsser states in the preface, there is a general tendency toward deficient instruction in the diagnosis of syphilitic and other diseases of the mouth, owing to the fact that the material is scattered among different clinics and a general view of the subject is not readily obtained. This book was therefore issued to

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serve as a basis for a complete study of oral diseases from the diagnostic standpoint, the treatment being only suggested and not described in detail.

The first 67 pages of the book consist of text material dealing with the pathology of the oral lesions occurring in the several stages of syphilis and congenital syphilis, and with the differential diagnosis of these lesions from other oral affections. The remainder of the work is occupied by the plates already referred to, with descriptive matter on opposite pages. These illustrations were made from models, but are accurately colored and well defined, so that the pictures are very life-like and admirably adapted for comparative study. Figures 52 to 73 are uncolored and depict many varieties of heredosyphilitic teeth, as well as dark microscopic fields with various species of spirochetas, including that of Vincent; there is also a diagram showing the chronology of the calcification of the teeth. This work undoubtedly affords an excellent idea of the various oral conditions represented, and will prove of special value as a training in the differentiation of syphilitic from non-syphilitic affections of the lips, tongue, and fauces.

MEDICAL MEN AND THE LAW. A Modern Treatise on the Legal Rights, Duties, and Liabilities of Physicians and Surgeons. By Hugh Emmet Culbertson, of the Ohio and New York Bars, Contributing Editor to the Laning, Ohio, "Encyclopædic Digest," etc. Octavo of xv + 325 Pages. Philadelphia and New York: Lea & Febiger, 1913.

This is a book written for physicians by a lawyer. It differs from the usual books on medical jurisprudence in that no attempt to instruct the reader on strictly medical matters is made, the aim being more particularly to show the physician how he is likely to stand before the law in various eventualities involving his relationships to patients. The scope of the work may best be judged from the chapter and subheadings. Thus there are sections devoted to the question as to who may practise medicine, the constitutionality of statutes regulating the practice of medicine, requirements for admission to practice, grounds for revocation of license, what constitutes practising medicine and surgery, the relation of physician to patient, duty to respond to all calls, contract of employment, duty as to the use of anesthetics, right to recover compensation, right for compensation for services rendered by students and assistants, who are liable for compensation, amount of compensation, actions for compensation, liabilities of physician in relation to malpractice, criminal liability, competency of physicians to testify as experts, privileged communications, right to protect professional reputation, the law with regard to wills, etc. The work has the advantage of being authoritative from the legal standpoint. It consists essentially of a well-connected and classified series of opinions from various courts on different matters relating to the physician; in each instance the reference is given, so that the physician who consults the book will know exactly what legal authority there is for or against his position. The book undoubtedly fills a want as a simple, readily understood exposition of the subject implied in its title, and will be warmly welcomed by the medical profession.

SEXUAL IMPOTENCE. By Victor G. Vecki, M.D., Consulting Genito-Urinary Surgeon to the Mount Zion Hospital, San Francisco. 12mo. Pp. 394. Fourth Edition, Enlarged. Philadelphia and London: W. B. Saunders Company, 1912. Cloth, $2.25, net.

In this edition the chapters on anatomy and physiology have been revised and enlarged. This was made possible by the advances made in urology, and was necessary in order that the author might form a proper foundation for his modified views on sexual neurasthenia, the influence of many diseases upon the sexual power, and for a proper understanding of internal secretion, of physiotherapy, and "for the most energetic protests against urological atrocities committed on the complicated and delicate structures of the deep urethra."

The chapters on the treatment of sexual impotence have been materially modified and enlarged. The sociological and ethical aspects of the subject remain as before.

The author is very positive in his views as to the inefficiency of the so-called aphrodisiacs, —yohimbin, muiracithin, etc.,—adding that they are not only inefficient, but in many cases harmful.

This little volume has risen almost to the dignity of a "classic" and may be freely recommended to those who are especially interested in the subject treated.—C. S. W.

A TEXTBOOK OF ALKALOIDAL THERAPEUTICS. Being a Condensed Résumé of All Available Literature on the Subject of the Active Principles Added to the Personal Experience of the Authors. By W. F. Waugh, M.D., and W. C. Abbott, M.D. Third Edition, Revised and Enlarged. Octavo of xi + 762 Pages. Chicago: The Abbott Press, 1911. Cloth, $5.00.

This unique volume is dedicated to those who believe in "the smallest possible quantity of the best obtainable means to produce a desired therapeutic result." The authors have spent many years in collecting from all sources, books, monographs, pamphlets, journals, etc., in all languages of the civilized world, the data available for this work. One hundred and fifty-five remedies are considered—alkaloids, glucosids, and chemicals. The opening chapters treat of general considerations in therapeutics, explaining the system of alkalometry, com-

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parative dosage of the active principles and the galenics, the classification of remedies, and the question of dosage. In Part II the various alkaloidal remedies are considered seriatim. We miss, however, a consideration of the sera, the vaccines, and the various antitoxins. A full index of diseases, with the appropriate alkaloidal remedy indicated in each condition, closes this well-filled volume.—C. S. W.

SURGERY OF THE BRAIN AND SPINAL CORD. Based on Personal Experiences. By Prof. Fedor Krause, M.D., Geh. Medizinalrat; Dirigierender Arzt am Augusta Hospital zu Berlin. English Adaptation by Dr. Max Thorek (Rush M. C. Univ. of Chicago), Surgeon-in-Chief, American Hospital, Chicago, Ill.; Consultant, Cook County Hospital, etc. Vol. III. Pp. 821-1201, with 42 Figures in the Text and 47 Colored Figures on 22 Plates. New York: Rebman Company, 1912. Leather, $7.00, net.

The third and concluding volume of this splendid work is in no way inferior to its predecessors. The illustrations are, if anything, even more perfect, the plates especially being admirably drawn and colored. The subjects considered in the text include neoplasms at the base of the skull, intracranial suppurations, metastatic tumor processes, injuries of the brain, and the entire field of surgical affections of the spinal cord. In the latter portion of the book the technique of laminectomy is first thoroughly discussed, next the diagnosis of spinal tumors, pachymeningitis, and other processes indicating laminectomy taken up, the possible untoward sequelæ of the operation pointed out, and finally the subjects of benign tumors, tuberculosis, and injuries of the spinal cord and column considered. As in the preceding volumes, each of the colored plates is accompanied by the history and clinical course of the case from which it was taken, and the significance of each illustration is thus better impressed on the reader than if it were presented alone. Fifty-one cases are thus described in this volume. Of interest are the author's operative results in brain tumor, summarized on page 842. Of the operations 19 were performed in one sitting, with a mortality of 67 per cent., while 72 cases were operated in two sittings, with a mortality of 20.85 per cent. The relative mortality rates in operations on different portions of the brain were as follows: frontal region, 43.5 per cent.; central region, 27.1 per cent.; temporal lobe and island, 26.6 per cent.; parietal lobe, 32.8 per cent.; occipital lobe, 25 per cent., and cerebellar hemispheres, 53.7 per cent. Of 24 patients with tumors in the cerebellopontine angle only 4 were cured. A number of interesting and in some instances bizarre cases are discussed in the section on otitic brain abscesses. The plates depicting surgical lesions of the spinal cord are numerous and well chosen. The work as a whole affords an excellent survey of brain and spinal surgery in its "heutige Stand" and deserves appreciation as such.

TEXTBOOK OF OPHTHALMOLOGY in the Form of Clinical Lectures. By Dr. Paul Roemer, Professor of Ophthalmology at Greifswald. Translated by Dr. Matthias Lanckton Foster, Member of the American Ophthalmological Society; Member of the American Academy of Ophthalmology and Otolaryngology. Volumes II and III. Pages 277 to 896. With 186 Illustrations in the Text and 13 Colored Plates. New York: Rebman Company, 1912 and 1913. Each volume, Cloth, $2.50, net.

The second volume of this excellent work, the first volume of which has already been noticed in these columns, is devoted to diseases of the eyelids, injuries of the eye, diseases of the vitreous, sclera, lachrymal organs, and orbit; to glaucoma, and to muscular or concomitant strabismus. Volume III, which concludes the series, deals with the pupil, pareses of the ocular muscles, the neurology of the eye, diseases of the choroid, optic nerve, and retina, and functional testing of the eye. There is also an appendix on the subject of asthenopia, written by the translator. As has already been mentioned in the review of Volume I, the subject of ophthalmology is considered, in this work, more particularly from the clinical standpoint. The presentation is undoubtedly such as will prove of great value to the practical worker in this field, who will find answered for him in systematic form questions he is likely often to meet. Thus in the part devoted to diseases of the eyelids there are sections with the following headings: "Of What Diseases Are Disturbances of the Circulation in the Skin of the Lid Indicative?" and "Abnormal Discolorations of the Skin of the Lids and Their Diagnostic Significance." Stress is laid throughout on the symptomatic picture of the affections considered, cases from the author's own experience being referred to and illustrations showing their condition provided to supplement and carry home the descriptions given in the text. Considerable stress is laid in this and other ways on the diagnosis of the various eye affections, but treatment is by no means neglected, and in particular—an important point for the practitioner—the relative indications for different forms of treatment are fully discussed. This is exemplified in the section on glaucoma, in which, after an exposition of the treatment by myotics, detailed information is given as to the relative merits of the different operative procedures available, viz., iridectomy, cyclodialysis, and sclerotomy. The illustrations, as in Volume I, are good, especially the plates, photographs of patients, and diagrams. The translator is to be congratulated on the excellence of his work. This book is soon to be issued in a single volume, and in that form will prove more convenient for reference to the general practitioner and the specialist, to both of whom it can be warmly recommended.

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The General Field

Conducted by A. G. CRANDALL

March—An Eventful Month

The old farmer who noticed that if he lived through March he generally lived another year would have more than usual cause for self-congratulation if he survived March, 1913.

The reason why the month of March has been reviled from time immemorial is, of course, the different varying brands of weather it produces. March, 1913, however, set out early to hunt for new records and certainly succeeded.

The movement to have the inauguration of the president postponed from March until May is undoubtedly based on good reasoning. The new government has enough to put up with the first month, even if weather conditions are favorable. The recent administration, established at the Capitol of the United States, has shown unusual moderation, official decapitations being few, and little has transpired to produce consternation among professional office-holders. Nevertheless, even with the evident good intentions to preserve peace and harmony, the present administration was unable to overcome its exasperation at the meteorological exhibit produced by the veteran chief of the Weather Bureau, Willis L. Moore, and indignantly relegated him to private life.

The Vicious Circle

This term is well known to medical men and ought to become equally well known among the lay public.

Conditions have arisen which constitute a vicious circle of serious import. Pressing economic necessities constantly spur the wage-earner to make demands for higher earnings, and this in turn tempts rural people away from the farms, which go untilled, resulting, as a natural consequence, in higher prices for farm products. All the present tendencies seem to point to a continuance of these conditions with steadily increasing intensity.

Just what the result will be is difficult to determine, but there must come a readjustment some time. The bubble cannot continue to expand indefinitely.

While the wage-earner is having a hard time to get on, the employer is not reclining on a bed of roses. The demand for higher wages, the "full-crew" law, and other legislation more or less socialistic in its origin, is rapidly bringing the railroads face to face with conditions where their net earnings must decrease. This cannot fail to produce a depressing influence upon the general conditions of business everywhere.

Public opinion seems to be an ever-oscillating pendulum; it never can quite reach the equilibrium.

The basis of prosperity of any country is always its sturdy, self-reliant yeomanry, and every agitator who clamors for an eight-hour day for the average industrial laborer is making it just so much harder for the farmer to secure the very essential farm help. It is not feasible or practicable to undertake to run a farm on an eight-hour labor schedule. The average farmer must put in long hours and secure help which is willing to do the same, or he finds farming an intolerable burden and a nuisance, and, as soon as circumstances permit, he readjusts his plans in such a way as to avoid the never-ending annoyance identified with hiring farm help.

The eminent philanthropist who will

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provide free transportation to the farms for the tenement dwellers who through some miracle may be induced to leave their crowded quarters will be providing the people with something better than libraries.

Beef or Eggs

In a recent address, Dr. Solomon Solis-Cohen, of Philadelphia, discussed the comparative nutritive values of milk and eggs, on the one hand, and good red beef, on the other. In the opinion of this eminent authority, nothing quite takes the place of the beef.

This is likely to bring up in the mind of any thoughtful person one of the greatest problems now presenting itself to the average family.

Notwithstanding the steady increase in population and the improved facilities with which the science of agriculture is now carried on, the number of beef animals in the United States is steadily decreasing. Already the price of prime beef has reached a figure almost prohibitive from the standpoint of the average family.

It is a favorite theory, advanced by contributors to the woman's page in the average daily newspaper, that the less desirable sections of the beef carcass can be utilized in the family at a greatly reduced expense, and with equal satisfaction and benefit, when prepared with proper culinary skill. The facts are, however, as in almost everything else, that quality determines the price of beef, and that the cheaper portions are not in many instances worth relatively as much as the high-priced cuts.

There is little satisfaction to the practical housewife in buying cheap grades of meat containing a large quantity of waste. Not many people can assimilate beef fat as they do the juicy red meat. The sooner this fallacious line of reasoning is abandoned, the better it will be,—at least for those who may be momentarily deluded thereby.

The question of the beef supply for this country is, therefore, one of increasing importance. Few physicians are likely to disagree with Dr. Solis-Cohen in his statement that beef constitutes the best food for the average family, in providing immunity to disease and the physical stamina which enables the child to grow to adult years with unimpaired vitality. The sooner the real facts are understood, the better it will be.

The Battle

A man prominently identified with the study of agriculture as a science estimates that the annual loss in this country from insect enemies and the various vegetable blights with which the farmer has to contend is a billion dollars annually.

No one has ever attempted to estimate the financial loss due each year to the ravages of bacterial diseases affecting humanity.

It is not a sign of gross materialism when the wage-earning value of a person, prematurely stricken with a fatal disease, is estimated and considered in its financial aspects. The loss to the immediate family and circle of acquaintances may be sentimentally large, but the loss to the community is, in the average case, a financial one.

There must also be considered, even by the most affectionate members of the family, the possibility of a long and expensive period of invalidism.

Much important research is being carried on in the interest of agriculture, but the great mass of the farmers are not in a position to profit thereby to a

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great extent. Reports of the investigations of the various agricultural bureaus are far too technical for general comprehension by the average farmer.

A similar condition prevails with reference to the reports of laboratory workers and physiologists—they are often too technical for the comprehension of the average medical man.

And although there are a large number of instructors, real teachers who can adapt their own knowledge for the ready comprehension of others are comparatively rare. At no time in the world's history were teachers of the better class needed more than at present. Problems of the most vital importance to the human race, problems which are to a large extent solved, have not yet been translated into language intelligible to those who must be depended upon to fight the real battles of continued existence and sustenance.

Fighting for the Plumage Birds

It seems to be very hard to secure necessary legislation for the protection of birds of plumage, and, even when legislation is enacted, there are ways of getting around it.

All who are familiar with the subject claim, and no doubt justly, that there is a direct connection between the gradual extermination of the birds and the high price of living. The farmer has to wage unceasing warfare with insect enemies and the birds are very able allies in the cause.

All humane considerations seem to carry little weight when the question of millinery arises.

State laws are so unsatisfactory in the regulation of this evil that it will probably be necessary to establish some special ruling to exclude bird plumage from interstate commerce. Only stringent regulations which make such traffic a serious misdemeanor will probably ever be really effective in stamping out this outrage, so contrary to all humane principles.

Nothing What it Seems—in New York

Third-degree methods have apparently reached their climax in New York. Confessions have become the fashion, and promptly and simultaneously their value has slumped. The time is evidently not far off when nothing will be considered as such unreliable evidence on the part of a New York criminal as confession. This does not mean, however, that any spectacular criminal who falls into the meshes of the law in New York, and has to stand trial with incidental newspaper comment, will not be in a measure punished for his crime. Publicity is said to be a deterrent of the evil deeds to which humanity is prone. This remedy is unsparingly applied in New York.

District Attorney Whitman says that the habitual criminal is usually uninteresting and stupid because of gross ignorance. He is undoubtedly right, and the best possible remedy for crime is that education which enables a person to clearly comprehend the relations between cause and effect.

A fictitious confession is indicative of the cunning of ignorance rather than the shrewdness of education.

The Science of Keeping Warm

Some people fear that they will work themselves to death; the danger is much less than they think.

Biographies of people who have lived to a very advanced age usually show that they have been hard workers.

Those who have survived the perils of

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childhood and arrived at maturity can live to an advanced age if they will provide themselves with reasonably good air to breathe, of the right temperature, show fair judgment in eating, and keep steadily employed. It is becoming noted more and more even by the lay public that the retirement of elderly people from their active occupations is pretty sure to bring on an early disintegration and premature collapse.

Now, however, this more or less psychological subject being understood, and people now knowing more about the nutritious value of foods, there remains one more health problem to be solved which evidently is very puzzling to the inhabitants of all civilized countries, and that is the science of keeping warm and not too warm.

Average adults seem to be divided into two classes: those who attempt to harden themselves by more or less reckless exposure, and those who coddle themselves too much.

There is evidently a place for a good book on the science of how to keep warm and not too warm.

The Rival Serums

It is indeed unfortunate that the experimental use of the tuberculosis serums must be exploited through the newspapers and false hopes kindled among those who are beyond any possible aid.

Physicians who have seen a succession of patients suffering from various ills buoyed up by false hopes, as a result of newspaper publicity, naturally regard with suspicion any remedial agent which must be tested in the spotlight.

Two rival serums are now contesting for professional and public favor. How much better it would be if such experiments could be carried on quietly by physicians only and without publicity!

There are some medical subjects in which it has been well to lift the veil and allow the laity to watch the discussions or even take part in them. Problems of social diseases have been kept away from the public too long, but the secrecy which is being dispelled from the discussions of venereal diseases should, for humanity's sake, be allowed to rest upon the experimental work with the tuberculosis serum.

Destroying a Great Industry

The Delaware Legislature, much to its credit, has recently enacted a new marriage law which makes it quite inconvenient for ardent young couples 16 or 18 years of age to slip away from their parents for a few hours and seek the marrying parson of Wilmington.

There is thus one less active factor in producing the misfit marriages which result in a trip to the divorce court. Enlightenment on the causes of unhappy marriages often seems to come slowly, but eventually it arrives. When the marriage and divorce laws of the different States have been standardized and a large number of those who now prefer to be ignorant have opened their minds to the real facts in relation to certain social diseases, the millenium will not seem to be quite so many million years in the future.

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Original Articles

UNRECOGNIZED PULMONARY LESIONS IN CASES OF SUSPECTED CHRONIC PLEURISY.

BY CHARLES M. MONTGOMERY, M.D.,

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THOUGH the subject is an elementary one, I feel it may not be amiss briefly to direct attention to a certain class of cases, namely, those in which a diagnosis of chronic pleurisy, to the exclusion of pulmonary involvement, is often made, when in reality there exists some degree of disease of the underlying lung-tissue itself. I am convinced that such mistakes occur more frequently than is generally recognized, basing my conclusion on the scant and unsatisfactory references to the subject in the literature, and on clinical errors established at autopsy. Faulty teaching has not been the least unfortunate result of failure to appreciate the importance of this subject.

The present remarks are not concerned so much with the points of difference between fibroid pleurisy and pulmonary disease as with the points of similarity between these two conditions, and are designed to emphasize the necessity of always suspecting a pulmonary lesion when one meets with signs that may also be produced by fibroid changes in the pleura. I shall only touch upon this single phase of the larger subject which deals with the significance of any abnormality in the physical signs in relation to the diagnosis of pulmonary involvement.

ETIOLOGY AND PATHOLOGY OF CHRONIC FIBROID PLEURISY OCCURRING INDEPENDENTLY OF FLUID IN THE PLEURAL CAVITY.—To reduce this subject to present needs it may be said that numerous factors, some of an acute and some of a chronic nature, may lead to the production of fibrous tissue in the pleura. These factors result in some cases in only slight pleural adhesions with various grades of obliteration of the pleural cavity, often, but by no means always, giving rise to evident symptoms and signs; while the result in other cases is a readily appreciable thickening of the pleura, which may attain to a centimeter

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or more, usually occasioning distinct signs and symptoms. The post-mortem room teaches that when there are fibroid changes in the pleura, and more particularly if these have resulted in any degree of thickening beyond what is found in a simple adhesive pleuritis, and provided also that the pleurisy has developed independently of the occurrence of any fluid in the pleural sac, the lung very frequently exhibits some pathological change. This holds true for both tuberculous and non-tuberculous cases. Indeed, so frequently is this association present that knowledge of this one fact alone should always make one at least suspect a pulmonary lesion when he encounters the evidences of a fibroid pleurisy.

Importance of the History and Symptoms in Determining the Condition of the Lungs in Cases of Suspected Fibroid Pleurisy.—Necessary as are the history and symptoms in the diagnosis of most medical conditions, there is no class of cases where they are more important than those at present under consideration, for here they are absolutely essential. When all the symptoms have been minutely studied, and their duration and severity carefully considered, it seems incredible that any marked degree of pulmonary involvement could often be overlooked; yet such a mistake is constantly occurring. The mistake, however, is perhaps less apt to be one of diagnosis of the disease than of the diagnosis of the extent of the intrapulmonary lesion. Thus, a diagnosis of tuberculosis may be made, but the abnormal findings over most of the affected area are accounted for by a thickened or obliterated pleura, to the neglect of an extensive, even though scattered, infiltration of the lung. In many cases the history and symptoms must determine our attitude toward the significance of our physical findings.

Physical Signs of Fibroid Pleurisy.—Definite as these may be in certain cases, no one of them, and no combination of them, can, without other evidence, exclude pulmonary involvement. They may be distinct, but are not distinctive. By themselves they can only point to fibrosis, without determining its location. Moreover, the greater the thickening of the pleura, and the more marked the resulting physical signs, the more masked is likely to be the condition of the underlying lung.

The signs ordinarily given for thickening of the pleura are as follows:—

Inspection.—On inspection there is asymmetry of the chest, one side being smaller, the other larger, than normal, and there may be curvature of the spine and displacement of the cardiac apex. On the affected side abnormal depressions, limitation of motion, in some cases retraction of the interspaces during inspiration, and absence of Litten's phenomenon occur. All of these signs are encountered in chronic pulmonary disease, in which condition they are apt to be more marked than in fibrosis limited to the pleura,—a consideration that is at times of most valuable diagnostic significance.

Vocal Fremitus and Vocal Resonance.—These are often diminished in cases of thickened pleura, but exceptionally also in fibroid disease of the lung, either with or without an associated active pulmonary process.

Percussion.—Various grades of impairment, even to complete dullness, occur in both pleural and pulmonary lesions, but, as previously implied, any

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fibroid change in the pleura sufficient to impair the percussion note, particularly if this impairment becomes at all marked, should make one suspicious of morbid changes in the lungs. At the same time it is to be remembered that changes in the pleura and even quite marked involvement of the lung may cause no modification of the normal resonance.

Breath Sounds.—When the pleural cavity is simply obliterated the breath sounds may be normal, but with much thickening the respiratory murmur is usually diminished. Likewise, when there is disease of the lung, whether in the form of a scattered infiltration or of a consolidation, either fibroid or exudative in character, there may be revealed no change in the breath sounds beyond a weakened or absent respiratory murmur.

Adventitious Sounds.—The determination of the possible seat of origin of certain adventitious sounds, whether in the pleura, or in the lung, or in both, is an unsettled matter. I hesitate to attribute invariably to the pleura the source of any adventitious sound except one that corresponds to the typical leathery friction rub so characteristic of the acute pleurisy in lobar pneumonia. The pleura is frequently credited with being responsible for quite a variety of different sounds, and even so eminent an authority as Sir Andrew Clarke, in speaking of fibroid disease of the lung, mentions "coarse, bubbling and metallic crepitations, rhonchi, *pleuritic creakings and frictions,* and peculiar squeaking, sucking sounds." With all due respect to the clinical and pathological experience of this great physician, I have been unable to find in his writings or elsewhere in the literature any convincing proof to establish a definite connection in all cases between most of the adventitious sounds ordinarily attributed to the pleura, including "pleuritic creakings," and a pleural origin. So vast a variety of adventitious sounds is encountered in cases with various forms of pulmonary involvement that the only safe course to pursue is to regard most of these sounds as at least possibly having a pulmonary source, until more proof to the contrary is available.

In addition to the *signs of visceral displacement* not previously mentioned, other methods that may assist in the diagnosis are: *radiography,* Rosenbach's *palpatory puncture,* and *incision* down upon the pleura for the purpose of inspecting its condition. The degree of ease or difficulty with which manometer oscillations can be obtained on attempting to introduce a trocar within the pleural cavity might occasionally be of service.

Two Special Types of Cases.—After what has been said, a brief consideration of two special types of cases will permit of illustrating the general class of patients in whom there may be difficulty in determining whether the pleura alone or the lung itself is involved, namely, (1) cases of fibroid disease of the lung without evidences of toxemia, and (2) cases of tuberculosis in which there may be some question as to the extent of the pulmonary lesion.

1. *Fibroid Disease of the Lung Without Toxemia.*—The most important evidences to help one in differentiating between a fibroid lung and a simple thickened pleura may be a marked degree of deformity and of visceral displacement, as pointed out by Sir Andrew Clarke in the only description I have met with dealing with this differential diagnosis. Typical signs of con-

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solidation, when these are available, will, of course, indicate pulmonary involvement. The presence of râles will be of great assistance in some cases. A thorough knowledge of the history and symptoms will often be required to establish the diagnosis.

2. *Pulmonary Tuberculosis in which the Extent of the Pleural and Pulmonary Lesions may be Difficult to Determine.*—In cases of pulmonary tuberculosis it is a common error to overlook small, scattered foci of tuberculosis, perhaps disseminated throughout a whole lung, the signs over the area being slight and being interpreted as accompanying only a greater or less degree of thickening of the pleura. It is a curious thing that the most minute changes in the physical signs at the apices will be recognized as signifying pulmonary involvement, while similar signs elsewhere and over larger areas will lead to a diagnosis of thickened pleura. Any localized abnormality in the physical signs in tuberculous cases, no matter how extensive the area affected, should always direct attention to the condition of the lungs. The physical signs alone will often fail to settle the matter for us, and a searching investigation of the history and symptoms may be required to determine whether these signs are associated with pulmonary disease or not. Two signs in particular are apt to be regarded at less than their true worth, except when they occur at the apices, viz., weakening of the respiratory murmur and râles. Diminution in the intensity of the breath sounds may be the only abnormal physical sign associated with small, scattered areas of infiltration in the lungs. Regarding râles, no comment in addition to what has already been said is required, except to insist that their importance is as great if they are distributed over a large area that is localized or limited as if over a small one. Another very important sign is diminished respiratory movement on one side. Surely, the slightest departure from the normal physical signs should make us suspect a pulmonary lesion, for even in the absence of all abnormal physical findings we may be called upon to make a diagnosis of pulmonary disease, and perhaps in a general way to estimate its extent.

As regards the difficulty of diagnosing the condition of the pleura itself, the statement of Fowler and Godlee may be repeated, that "surgical proceedings have proved that it is practically impossible to be certain whether or no the surfaces of the pleura are adherent. In the course of operations undertaken for the drainage of cavities in the lungs, after confident opinions had been expressed by experienced physicians that the pleural surfaces would be found adherent, they have proved not to be so, and it has been necessary to stitch them together and wait for union to take place before proceeding to open the cavity."

To summarize, it is often impossible by physical signs alone to distinguish between fibroid changes in the pleura and disease of the underlying lung. Any deviation from the normal physical signs in the chest should direct attention to the condition of the lungs, and when these signs are equivocal they must be considered along with the history and symptoms. Localized abnormalities in the physical signs are often as significant of pulmonary involvement when they occur over large areas as over small ones.

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SOME COMMON TYPES OF HYPOSECRETION OF THE THYROID.*

By OLIVER T. OSBORNE, M.A., M.D.,
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It is the object of this paper to present a few types of what I consider hypothyroidism, or symptoms of subthyroid secretion. Many of these conditions are not recognized, and patients suffering from disturbed physiology of this gland drift from physician to physician, and are improved only after the diagnosis has been made and the proper treatment inaugurated. Unquestionably, many of these patients are psychopathic and may improve by mental treatment. The thyroid gland is peculiarly susceptible to mental stimulation and to mental depression, and anything that quiets mental excitation will diminish a hyperthyroid secretion of the gland, and anything that removes mental depression will increase a subnormal secretion of the gland.

Some instances of disturbed secretion of the thyroid, a few of which I shall relate, look like pure hysteria, or that disturbed nervous state which we call neurotic, but for the pathology of which we are still searching. Therefore, many will ascribe the favorable results obtained by treatment of the thyroid as simple instances of mental impression.

The physiological activities which a normal thyroid is expected to furnish may be summed up as follows: It is a necessary stimulant to growth in childhood, both bodily and mentally; it is always a stimulant to mental activity and to proper cerebration; it takes active part in the deposition and distribution of fat; it takes an unknown but important part in nitrogen metabolism, and many times it is an active opponent to nitrogen poisoning; without its activity proper genital development is impossible, and the secretion of the genital organs is imperfect. It takes an active part in the function of menstruation and in the development of the fetus in pregnancy. During the repeated periods of menstruation and during pregnancy it normally furnishes an extra amount of secretion. If it does not do so, the menstrual function is imperfect, the woman during pregnancy is abnormal, and parturition is likely to develop eclampsia and the child is likely to be born a cretin.

The thyroid gland, while present in the young infant, reaches its full development only at puberty, and after 45 begins slowly but progressively to furnish a diminished secretion; the gland gradually atrophies in old age. This atrophy or diminished secretion seems to allow an increased connective-tissue development in various parts of the body, notably in many organs; in other words, its atrophy allows sclerosis, and its early atrophy or early insufficiency causes early sclerosis.

The gland has a good deal to do with the condition of the blood. This, however, is not well understood. At times, too much of its secretion causes

* Read at the Thirteenth Annual Meeting of the American Therapeutic Society, held in Montreal, Canada, May 31 and June 1, 1912.

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hemorrhage. At other times, an insufficiency of its secretion allows or causes hemorrhage. This difference in action is perhaps due to the facts that too much secretion dilates the blood-vessels (the gland furnishes a secretion which is a vasodilator), which may allow or cause hemorrhages from mucous membranes, as from the nose or from the uterus, and that subsecretion must sometimes allow a condition of the blood to occur which is not dissimilar to that of hemophilia, or to that condition which occurs in patients with hemorrhagic diathesis; in other words, a very aplastic condition of the blood, perhaps a diminished calcium content. It seems, at times, to have something to do with stimulating or encouraging the production of red blood-corpuscles, as in the condition of chlorosis it is not properly functioning.

When it is considered how little secretion the thyroid furnishes per hour or per day, and that this secretion is picked up by the blood as it passes through the normal thyroid, it is not surprising, when there is an enlarged thyroid from normal hypertrophy, such as occurs in Graves's disease, and especially when the blood-vessels are dilated as seen in many such cases, that the blood, acquiring so much more thyroid secretion in a given time, must of necessity produce the intoxication that we see in this disease. An enlarged thyroid with large, dilated vessels has been estimated to allow the whole blood of the body to pass through the gland at least once an hour. When it is remembered that thyroid feeding may produce prostration and dangerous symptoms, it is easily understood why, in Graves's disease, the blood thus loaded with thyroid secretion causes such serious and sometimes dire symptoms.

As above stated, various mental conditions stimulate or depress the thyroid. This is true of some functions, foods, and drugs which act on the thyroid. The stimulants to thyroid secretion are great sorrow, great joy, and nervous tension; sexual excitement, genital disturbances, especially uterine, and pregnancy; cerebral stimulants, such as coffee, tea, and alcohol; and such drugs as arsenic, iodides, phosphorus, salicylic acid, pilocarpine, and, of course, thyroid extract. The idiosyncrasy of some patients to iodides I believe to be due to an extra susceptibility of the thyroid. Depressants to thyroid secretion are: quiet, seclusion, and absolute rest; absence of all sexual excitement and all genital irritation; a milk or milk and cereal diet; lime, perhaps in almost any form, but especially as the glycerophosphate; most hypnotics, especially bromides and chloral; opium as a quieter of all glandular activity, possibly by quieting the mental activity and stupefying it, and ergot.

I can only express once more my hope that the physiological chemists will soon be able to differentiate the various elements of activity of the thyroid gland. Histologically, the thyroid may be perfectly normal, and yet it may be furnishing a secretion that is disturbed, *i.e.*, the relation of the different elements to each other is abnormal, and yet, as a whole, the gland will be neither oversecreting nor undersecreting. Such a differentiation would explain the varying symptoms caused by subsecretion and would account for the fact that such symptoms are not improved when the whole gland is fed.

When the very active part that the thyroid gland takes in the life of the female is recognized, it is not to be wondered at that thyroid instability so

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frequently occurs in women, and that the normal activity of the gland is so often increased at times when it should not be increased, or, on the other hand, that, having been so many times normally hypersecreting during the woman's life and so many times not returning quickly to normal when such hypersecretion is not needed, the gland becomes overworked and finally hypofunctionates. This thyroid instability, at times hypersecreting, at others hyposecreting, can account, as no other one etiological factor can, for the so-called neurotic women who have at one time an asthma, at another time an urticaria, then an eczema, then a diarrhea, then perhaps joint pains, then unexplainable vomiting, then headaches, then tachycardia; each condition when present urgently calls for treatment, while improvement is followed by another abnormal condition.

As I propose to offer a few clinical histories of patients who have hyposecretion of the thyroid, I will first present a list of the conditions for which I think subsecretion of the thyroid may be responsible. These are: cretinism, slow growth in children, some types of eczema, some forms of asthma, infantile obesity, chlorosis, amenorrhea, some digestive disturbances, some forms of epilepsy, some forms of gout, depressant hysteria, sometimes the vomiting of pregnancy, some forms of eclampsia, some forms of melancholia, adiposis dolorosa, lipomatosis, myxedema, senility, and perhaps Raynaud's disease.

The following case shows the improvement caused by the feeding of thyroid to a defective child:—

CASE I.—*History.*—The patient, a girl, was first seen when she was 3 years old. She was the mother's first child, and, though not a cretin, was fat, rather large for her age, very backward about talking, and did not walk until she was 2½ years old. She had four teeth when she was 5 months old, and twenty when 18 months old. She was cross-eyed and pot-bellied, a large eater, and the bowels tended to be loose. She did not tell when she desired to urinate, and could not control the bladder. Adenoids had been removed, but the patient drooled a great deal, and could say but two or three words, and there had been no improvement in this line for three months. She was very nervous and did not sleep well; cried a great deal, and would not play by herself. There was no history of any sickness; she never had had any eruptions or a convulsion. The father and mother were both perfectly well. Physical examination was negative, except as above stated.

Treatment and Course.—The patient was given 1 grain of thyroid substance twice a day for some time, and then once a day for many months. In two months there was marked improvement; she slept well, cried less, and grew taller; the abdomen became normal and the disposition improved; she told when she desired to urinate and began to talk more. When first seen she walked inco-ordinately; this also improved, and in two months the patient fell but very infrequently. In about two years she began kindergarten work and continuously improved in all lines.

I had this child under observation for about three years. The mother of this child, aged about 30, became pregnant two years ago, and, lest she should give birth to another child who had subthyroid secretion, I gave her 3 grains of thyroid a day during the last three months of her pregnancy. She gave birth to a male child which weighed 14½ pounds and was fine and perfect in every way.

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The types of eczema which are improved by thyroid treatment are those which occur in babyhood and childhood around the orifices of the body and as fissures in the skin. The dry, scaly eczemas and the itchings of old age are also benefited by thyroid. Patients with dry skin, with or without powdery desquamation, in all grades up to real ichthyosis, lasting often a lifetime, show improvement after thyroid. The following two cases show the value of thyroid in these conditions:—

CASE II.—*History.*—The patient, a young unmarried woman aged 26, was first seen four years ago. Her skin, especially of the hands, abdomen, and legs, since childhood had always been rough, harsh, and almost like a mild ichthyosis. The epidermis peeled off in clouds and showers of dust every time she removed her clothing. She had never perspired normally, and was always very cold in winter.

Treatment and Course.—After a month or two of thyroid treatment the skin became softer; the patient said that the epidermic scaling was less than it had been since she could remember. The following winter she felt the cold less than she ever had. Her general health also improved. She was given thyroid on an average of 2.5 grains a day, sometimes more and sometimes less, for a year.

CASE III.—The patient, a man aged 61, had had more or less general eczema for two years. He suffered terribly from burning sensations and from itching, and always felt the cold greatly. He had received all kinds of treatments. He was put on thyroid, and almost immediately there was less itching; the skin felt better and he did not feel the cold, and in a month there was great improvement. He was then not seen for several months, when the same symptoms were beginning to return. He was put on thyroid treatment and again improved.

Sometimes the etiological factor in asthma is, as all know, very difficult to determine. Without enumerating the many causes, suffice it to say that occasionally a disturbed thyroid secretion is the cause, and that the securing of an increase in the secretion of the thyroid cures the patient. The following is an example:—

CASE IV.—*History.*—The patient, a married woman aged 42, had suffered from a cough, off and on, for eight years; for the last two months before I saw her she had had it steadily. She raised both mucus and pus, but never any blood. The menstruation was regular, but had been scanty for a year. She never had had any severe illness. She had had six children; the youngest was 3 years of age. The family history was negative. She was wheezing with a typical asthmatic condition, and had great dyspnea on the least exertion. She had had a bad asthma attack six months before, the first one she had ever had. She had lost twenty pounds within a short period. The present attack of asthma had lasted two weeks. The sputum was negative as to tubercle bacilli. The thyroid was small. The diagnosis was asthma due to impaired thyroid secretion.

Treatment and Course.—To activate the thyroid the patient was given 3 grains of sodium iodide three times a day; she began to improve immediately; the asthma and cough disappeared and she gained two pounds in four days. The iodide was then reduced to twice a day, and in another week she had gained six pounds, and was feeling well in every way. The iodide was then reduced to 3 grains once a day, and in a week she considered herself cured. The successful action of this small dose of iodide was as an activator of the thyroid gland.

The next case shows an interesting story of various subthyroid disturbances:—

CASE V.—*History.*—The patient, an unmarried woman aged 40, came to me complaining of abdominal distention, which she had had for three years, and which had

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become worse during the last six months. All kinds of diagnoses had been made of various intestinal indigestions, disturbed circulation, etc., for which she had been treated. The bowels moved three times a day; this had been a habit for years, and she did not call it a diarrhea. Menstruation was regular. She had some palpitation and some little dyspnea, and at times she thought she had an asthma; she could not sleep well at night on account of it. She had had a slight cough for a good many years, frequently raising mucopus; she was subject to hay fever and asthma in the summer. She felt weak all the time, and said that her feet and legs occasionally swelled at night. She had lost weight. The pulse was slow, down to 54. The lungs were asthmatic; heart normal; abdomen negative, except that it was tympanitic. The urine was negative. Diagnosis, hyposecretion of the thyroid.

Treatment and Course.—The principal treatment was thyroid, at first 5 grains a day, then 2½ grains a day, then 2½ grains every other day; ten days from the time she started the treatment the patient stated that she had not been as well in every respect for three years.

The following case is interesting as showing a combination of asthma and eczema:—

CASE VI.—*History.*—The patient, a girl aged 6, was subject to recurrent colds, with asthma. She had somewhat enlarged tonsils, was pale, a poor eater, and had a more or less constant peculiar skin eruption; it was not eczema and not itch, although the first appearance looked like scabies. The child never perspired. The diagnosis was insufficient thyroid secretion.

Treatment and Course.—The patient was given 1 grain of thyroid a day for some weeks. Very soon the eruption and asthma disappeared and the child improved and became well. I did not see her again for one and one-half years, when she again had an asthma. At this time I gave her 3 grains of sodium iodide three times a day to activate the thyroid gland. She did not improve. The asthma was no better. I gave her 1.5 grains of thyroid once a day, and the asthma quickly disappeared. I did not see her again for two more years, when she had the same recurrence of asthma. Thinking that she was old enough now for the iodide to stimulate the thyroid, I gave her 3 grains of iodide three times a day. This acted as I expected, and the asthma quickly disappeared.

Amenorrhea is very successfully treated with thyroid; chlorosis will often improve as rapidly with thyroid as with iron or arsenic. In fact, I know of no emmenagogue which acts as well as thyroid. Whether in large doses it could cause abortion I do not know, but certainly in delayed menstruation in young girls and in amenorrhea at almost any age, especially if there are other symptoms of insufficient thyroid secretion, as putting on of weight or drying of the skin, thyroid is almost a specific.

It is rarely recognized that a number of digestive disturbances can be due to insufficient thyroid secretion. It is recognized, however, that hypersecretion of the thyroid can cause such disturbances. These disturbances are mostly diarrheas. The exact reason that insufficient thyroid secretion causes indigestion, and especially intestinal indigestion, is at present difficult to understand. The following is a very interesting instance of the successful use of thyroid:—

CASE VII.—*History.*—The patient, a boy aged 8, was brought to me two years ago with the history that three and one-half years before he had had an acute intestinal attack of some kind with which he was seriously ill for months. Since that time, off and on, at intervals, he had had these intestinal upsets, with bad diarrhea, and at this time frequent involuntary movements. He also at these times had albuminuria. There was

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a peculiar pigmentation on the hands and neck and a little on the face; also there were some leucodermic spots on different parts of the body, especially the neck and hands. He had also some of this dark pigmentation on his thighs and lower abdomen. All sorts of diagnoses had been made and all sorts of treatments had been instituted, all more or less unsuccessfully, although sometimes these diarrheal attacks seemed to become better under some treatment, only to recur again. The heart, lungs, abdomen, and urine were negative. A few of the cervical glands were palpable.

Treatment and Course.—The patient was given thyroid, and electric treatment to the imperfect anal sphincter. The sphincter soon became competent, and the boy improved in every way; the diarrheal attacks entirely disappeared, and after having been for years on a rigid diet he was now allowed all kinds of assorted food. The pigmentations and leucodermic spots gradually disappeared, and the patient became well. The thyroid treatment in small doses was continued for some months and then stopped, and in April, 1911, a year after I had first seen him, the patient began to have a little trouble again in the way of diarrhea, followed by constipation; also there were some abdominal pains, and puffing and swelling in different parts of the body, especially under the eyes. He had little irregular temperature attacks; sometimes palpitation of the heart. He was again given thyroid, again he improved, and the pigmentations, which had more or less returned again, faded. The boy, with slight disturbances, is constantly improving, growing, and doing finely. The last time I saw him was in December, 1911.

If epileptic attacks occur at the menstrual periods, or at regular four- or five- week intervals during amenorrhea, or develop at the menopause, disturbance of the thyroid is often the active or exciting cause, and the disturbance is generally a subsecretion. The reason that thyroid has been used unsuccessfully so many times in epilepsy is that the cases have not been properly selected. When thyroid is properly administered in the above-described class of cases, many times improvement and sometimes absolute cures take place, and any treatment that is successful without the use of enormous doses of bromides is certainly good treatment. The following is a case of great interest to me:—

CASE VIII.—*History.*—The patient, a girl aged 17, first came to me in April, 1904, with the history that from July, 1903, she had had peculiar sleeping attacks in which she would be almost in a comatose condition for two or three days. These attacks kept increasing in frequency, averaging at first once a month and now twice a month. In the last attack or two she had shown some stiffening, but had never had any convulsive movements, although she had made slight noises and had a little frothy mucus appear at the mouth. In the last attack she slept but twelve hours. After these sleeping attacks she could not hear for several days, and could not see well for two or three days, at times being almost blind; she did not recognize her family for several days. She lost her voice for nearly a week, and during these days did not recognize her own clothing, jewelry, etc. In some of these sleeping periods she did not appear even to breathe; she took no nourisment and no liquid, and at times passed no urine for from two to three days. Menstruation began when the patient was 14 and was slightly irregular, generally occurred every five weeks, and lasted four or five days. The sleeping attacks had generally occurred just before the period. Physical examination was negative in every respect, except that there was a slightly movable right kidney, and the thyroid gland seemed enlarged, though evidently subsecreting. A diagnosis of epilepsy and catalepsy was made, and the fact that these attacks occurred just before the menstrual period and were worse if the period was delayed, gave the indication for treatment, viz., to hurry menstruation and to antagonize whatever toxins might be in the blood at that time. Thyroid is an antitoxin, probably, of protein poisons.

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Treatment and Course.—The patient was given thyroid from April, 1904, and she never had another one of the sleeping attacks. In June she had a typical slight epileptic attack. In January, 1905, she was still doing finely, but had had two attacks of losing herself for from two to ten minutes after slight injuries; in other words, *petit mal* attacks. In May, 1905, having stopped the thyroid for some months, she again had several epileptic attacks in one day, followed by a prolonged sleep. Thyroid again stopped this. She married in August, 1905, and was not seen from that time until November, 1910, during which time she had had no recurrence of fits or sleeping attacks, but she now complained of hot flashes, fainting periods, and some irregular swellings. She was again given thyroid, with small doses of iodide, and I have not seen her since, but I feel sure that she would have come to me had there been any recurrence of the trouble.

CASE IX.—Five years ago the mother of this patient, aged at that time 44, had an attack of what was called rheumatism, and was sick for a number of weeks in a New York hospital. The rheumatism was located in the legs, and there were peculiar hemorrhagic spots all over both legs. She also, while in the hospital, had recurrent bleedings from the kidneys. She had been given the usual treatments, but, receiving no relief, she came to me, hardly able to travel. Knowing the history of the daughter and the tendency of thyroid disturbances to run in families, I decided to give her thyroid. The bleeding ceased within two days, and the petechiæ rapidly disappeared, as well as the rheumatic symptoms, and a number of years after there had been no recurrence.

The exact relation of thyroid secretion to the normal plastic condition of the blood is not known. Ordinarily, feeding thyroid will stimulate bleeding possibly by causing a dilatation of the blood-vessels, particularly of the uterus and nose, but instances not infrequently occur when the feeding of thyroid in hemophilia stops the bleeding. An interesting instance of its action was in an overweight woman at the menopause who, in spite of all the ordinary treatments, including calcium, epinephrin, ergot, atropine, digitalis, etc., bled profusely from the nose, gums, ears, stomach, intestines, and bladder; the urine passed seemed almost pure blood. The woman was nearly exsanguinated. This was four or five years ago, and rabbit- or horse- serum injections were not tried. From the history of having put on a good deal of weight and of sleepiness, I advised the administration of thyroid. The patient was given large doses of thyroid, and in twenty-four hours the bleeding ceased and did not recur until a week later, when, the thyroid having been stopped for two days, there was a slight recurrence. On the readministration of the thyroid, the bleeding again ceased.

Subsecretion of the thyroid can cause mental depression to all intensities, from simple apathy and indifference through depressant hysteria to actual melancholia. Administration of thyroid to such patients always causes improvement. Activation of the thyroid with small doses of an iodide in cases of mild subsecretion of the thyroid causes cerebral stimulation and satisfactory improvement. The obverse of this is well known, viz., that the administration of either thyroid or an iodide in Graves's disease will always increase the disturbance.

The most frequent of all hypothyroidism instances are those associated with added weight. These symptoms grade from the simple putting on of flesh after 40, especially in women after the menopause, to adiposis dolorosa, lipomatosis, and myxedema. The symptoms of typical hypothyroidism are scanty or absent menstruation, fat deposits on the breasts, upper arms, at the clavicles, hips,

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and upper part of the thighs, and, at times, the abdominal apron, which may hang over the pubis. Other associated symptoms are drowsiness, slow pulse, dry skin, puffiness of parts of the body at various times, and, perhaps, slow mentality. Instances of this type of patient are so frequent that it is hardly necessary to present clinical histories. Other symptoms of subthyroid secretion are puffing under the eyes and of the hands and feet, without kidney or cardiac lesion. This puffiness is not a real edema and may occur asymmetrically or symmetrically and at irregular times of the day; it is often worse in the morning. The skin is likely to be dry in these cases. Sometimes a glycosuria is due to insufficient thyroid secretion, as it may also occur in hypersecretion.

The following case is unique:—

CASE X.—*History.*—The patient, a young girl aged 16, was seen by me in consultation in 1905. The family history was negative. The patient had had convulsions when she was teething; was backward in school; began to menstruate when she was 14, but had not menstruated during the last year. She had attacks of fever, which had begun about a year before at the time the menstruation ceased. They lasted about nine days, to recur again in about three weeks. At the onset she had chills, headache, loss of appetite, pain in the abdomen, loose bowels, and insomnia. She had been treated for typhoid fever, for intestinal tuberculosis, malarial fever, and hysteria. During these fever attacks the temperature went above 103°, the pulse sometimes up to 130, and the respirations up to about 30. A diagnosis had also been made, on account of enlarged glands in the neck and enlarged spleen, of Hodgkin's disease, and the patient had been given repeatedly long-continued doses of Fowler's solution.

Examination.—It was during one of her fever attacks that I saw her. The glands of both sides of the neck, and also in the axillæ and groins, were somewhat enlarged; the pupils reacted slowly; the conjunctival reflexes were present; the heart and lungs were negative; the spleen was enlarged almost to the umbilical line and tender on palpation; the liver was apparently normal in size; the ovaries were not tender; the knee-jerks were exaggerated. The urine and the blood were negative. Just preceding one of those attacks of fever the mother said that the girl was listless, but still restless, and she (the mother) would know that a fever attack was about to begin. With this history and the repeated improvements and the continued recurrences it was impossible to make a definite diagnosis. On the other hand, the very fact of the periodicity and of occurrence about the time of the expected periods and that there was amenorrhea suggested the possibility that if the patient menstruated regularly she would not have these attacks of what was apparently a toxemia.

Treatment and Course.—The patient was given 5 grains of thyroid twice a day. In ten days she began to menstruate and was feeling well. The next month she menstruated again. Under thyroid medication, given intermittently, she menstruated every month until April, 1906, when she ceased to menstruate. Then in May, when I saw her again in consultation, she again had a temperature of 102°; abdomen was tense; spleen was enlarged; glands of the neck tender. She was given thyroid, and in a few days began to improve. In a few days the spleen and the glands were less tender and smaller, the temperature disappeared, and she became apparently well, and menstruated normally in June. This was in 1906. Her physician tells me that she was well until July, 1907, when, following a tonsillitis, the spleen again became enlarged and she had slight recurrence of the above symptoms. She was given thyroid, and in two or three days was again normal. She was well when last heard from in March, 1911.

Lest I seem to advise the frequent and careless use of thyroid, please let me urge that, when it is needed, but small doses be used, as it is potent for harm. When given to patients who should not receive it, it will make their

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symptoms worse, and sometimes but a little of it will push a wavering thyroid gland to hypersecretion and Graves's disease.

It should be added to the list of poisons, and the laity should not be able to obtain it without a physician's prescription. Though much of the thyroid substance on the market is not active, a little coincidently administered iodine, as an iodide, will render it active.

DISCUSSION.

Dr. Charles E. de M. Sajous, of Philadelphia, said he was quite in accord with the views expressed in the paper. Had Dr. Osborne or himself ventured to express such views before a society such as this twenty years ago, hanging would have been considered almost too good for the culprit. The profound effect of the thyroid upon the vital process, and the phenomena observed when its normal secretion was disturbed, had been well set forth by Dr. Osborne; the variety of affections with which this secretion had to do was almost infinite, in view of the fact that it influenced profoundly cellular metabolism, particularly the catabolic phase of the process, the hydrolysis of waste products, and the immunizing power of the blood.

Dr. F. M. Pottenger, of Los Angeles, Cal., said that Dr. Sajous must indeed feel proud to know that his long and arduous labors were at last appreciated. When the first volume of "Internal Secretions" appeared he had had the pleasure of reviewing it for the *Southern California Practitioner*, and in the article he had said that changes in medicine were now being made so rapidly that we ought to wait before condemning any novel views, especially when, as in the present instance, they pointed to the development of a great field. In the preface to the second volume Dr. Sajous had expressed some measure of disappointment that his work had not been better received; but now we all fully realized that this work had come to stay. He cited one case which illustrated especially well the value of recognizing the existence of abnormal thyroid secretion. This was that of a young married woman whose condition was similar to that of one of Dr. Osborne's cases. She was suffering from pulmonary tuberculosis, but, aside from having the usual symptoms, was sleepy, listless, sluggish, and forgetful of her children and her household duties, and had in fact become a burden upon her family. In his study of her case he came to consider thyroid hyposecretion as the probable cause of her unfortunate condition. He gave her thyroid, and the result was that, in the language of her family, she was "made over." Without the work of Dr. Sajous and his followers, he felt sure that it would have been impossible to do anything for this patient.

Dr. Alfred C. Croftan, of Chicago, said that a clinical experiment seemed to substantiate the laboratory evidence of a disintoxicating effect of the thyroid secretion. There were cases of asthma attributable to egg-albumin intoxication. In two children that Dr. Croftan had observed an attack of asthma could promptly be inaugurated when even small quantities of egg albumin were ingested. In one of these cases egg albumin had been recovered in the urine by means of a specific precipitin reaction, showing that native egg albumin unconverted entered the circulation. The interesting point in Dr. Osborne's paper was that the administration of small doses of thyroid together with egg albumin inhibited the asthmatic attacks, showing with some degree of conclusiveness that the toxic effects of this foreign albumin are neutralized by the administration of thyroid. Dr. Croftan said that he welcomed this opportunity of congratulating Dr. Sajous for at last coming into his own, as far as the recognition of his pioneer efforts in the field of internal secretions was concerned. He expressed the hope that Dr. Sajous would keep and collect all the stones that had been thrown at him during the last ten years until he should have accumulated enough material to build himself a permanent monument.

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Dr. R. D. Rudolf, of Toronto, inquired what the indications were for the administration of thyroid. There appeared to be a great variety of conditions, he said, which were dependent upon insufficient or otherwise abnormal secretion by the gland, and in which its use was attended with benefit; but how were we to decide when it was advisable to give it as a remedy? Again, as to the dosage—what amounts were to be employed? Beebe had called attention to the very different susceptibility of different individuals to the action of thyroid. How were we to deal with this inequality? It was a fact that, while the internal secretions had been placed upon a scientific basis by Sajous and others, the faith in their therapeutic value was founded on the most ancient beliefs.

Dr. Spencer L. Dawes, of Albany, N. Y., said that we should have definite views as to when thyroid was to be administered, how much was to be given, and what particular form was to be used—whether the thyroid extract, the serum, or the dried, desiccated thyroid. Indiscriminately used, it might be productive of much harm.

Dr. Osborne, in closing, said that he felt some diffidence in speaking on this subject because of the presence of Dr. Sajous, who knew so much more about it than he did. Personally, he never wrote out a prescription for thyroid unless he chanced to be giving it in association with other remedies, but made it a rule to dispense it himself. He therefore tried to get the best material available, and always kept on hand in his office specimens of thyroid from several of the most reliable producers. From disordered thyroid secretion there resulted all grades of conditions, ranging from those due to marked hyposecretion to those due to extreme hypersecretion. Included among these grades were borderline cases, in which one could not be certain at first whether the patient was suffering from subthyroid secretion or the reverse. In instances of this kind one might give a little iodine, when the ameliorating or aggravating effect produced would enable one to judge of the condition present. If benefit resulted, one might start in with 3 grains of thyroid in the form of good tablets; possibly also with 3 grains of sodium iodide. After about a week one would be able to tell whether it was advisable to increase the dose or not, and later the amount given could gradually be diminished.

BUBONIC PLAGUE: ITS HISTORY AND PREVENTION.

By VICTOR J. P. JOURDAN, M.D.,

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THE earliest positive account of bubonic plague dates from the second century of our era. The disease no doubt existed long before, but it was insufficiently described by the earlier writers for identification. During the year 542 A.D. a terrific epidemic broke out for the first time in Egypt, and rapidly spread over Palestine. Its causes were not known, and the investigators of the time were so baffled by it that they finally helplessly concluded that it must have had some undiscoverable local origin. It is a matter of historic record that the plague made severe ravages throughout the Orient during the Middle Ages and even later. The "black death" in the fourteenth century destroyed over one-half of the population of Europe. During the fifteenth, sixteenth, and seventeenth centuries many epidemics broke out in various parts of Europe and caused great loss of life. The disease was practically endemic in the Orient. During the eighteenth and nineteenth centuries the

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ravages of the disease grew less in Western Europe, but in the Orient they continued with great force.

These facts would to a certain extent seem to establish a direct relation between the advance of civilization and the decrease of pestilences. The higher our state of civilization, the less favorable the pathogenic conditions, and the lower the civilization, the more favorable. This is well illustrated by the fact that among the unsanitary Egyptians, even in the middle of the nineteenth century, there were still found ophthalmia and elephantiasis, and by the fact that among the Hindoos cholera and other plagues are still recurrent.

The ancients had peculiar views about the causes of pestilences; some thought that they were emanations of the anger of the gods; others ascribed them to hot south winds of long duration; others laid the cause on comets and other astronomical phenomena; some even attributed them to volcanic eruptions. But toward the middle of the Christian era those views were fortunately abandoned and more scientific views about the causes of the disease adopted. As a result the sick were better cared for.

During the latter part of the sixteenth century the Spanish government took some steps in the way of trying to limit the spread of bubonic plague. First, they closed the theaters and forbade school and other meetings, and even religious worship. Second, the government ordered that hospitals for plague patients should be outside of the city limits. Third, that physicians, barbers, and other attendants on plague patients should wear a leather suit. Fourth, that bonfires be lit in the evening at various places in the city. Fifth, that the dead should be buried within six hours, and their bed, effects, and other things which had come in contact with the patient burned in assigned places. But in spite of all those measures the mortality during the epidemic of 1598 was very high.

During the sixteenth and seventeenth centuries scientists came to hold many views about the cause of bubonic plague, but they arrived at no definite conclusions. In 1556, Andrés Laguna, of Segovia, Spain, who was an eminent physician of the Royal Court, wrote his views on this subject, stating that the disease was due to infected air breathed through the pores and thus brought in contact with the system through the arteries. In this view the writer showed that he had a good forerunning idea of the circulation of the blood. In his work he also recommended that physicians attending cases of bubonic plague should be well paid by the government and should attend no one else. In the year 1571, Fioravanti, a Venetian physician, published his views of bubonic plague in a book entitled "Il Reggimento della Peste." In his work he argues that the disease is due to the corruption of natural heat, that is, solar heat. As a means of prophylaxis he recommends to turn the day into night and *vice versâ*, that is, to sleep in daytime and attend to business at night. As treatment he recommends to bleed from a vein near the site where a lesion first appears. He also advises to apply poultices on the buboes.

In 1643 trade between France and Spain was discontinued on account of a malignant disease which existed in France. In the year 1720 Marseilles was the site of a great epidemic which caused a frightful mortality. The

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Royal Minister of Spain sent Don Josef Fornés to Montpellier, France, to consult with other eminent men of that city about the cause and prevention of bubonic plague. When he arrived in Montpellier he consulted with Chicoyneau, Deidier, and Verni. As a result they wrote two volumes, and, while these did not throw much light on the cause of the disease, the work showed that they were becoming systematic. The first book consisted of letters exchanged between scientists in regard to bubonic plague, and set forth the views and experiences of various medical men. The second work was in five divisions. The first division outlined the causes, signs, and symptomatology of the disease; the second dealt with the means of prophylaxis; the third with the methods of curing the disease; the fourth with the differential symptomatology between the various plagues, and the fifth with the symptoms and after-effects of the disease.

In 1785, Don Benito Bails, director of mathematics at the Royal Academy of San Fernandez and fellow of the Royal Academy of Spain and other honorary bodies, wrote an interesting book in which he inveighed against the habit of burying the dead in churches and other such edifices. During the eighteenth century many eminent physicians went out from France and other countries to the East to study the disease. But as their means of investigation were somewhat limited, they accomplished very little. Several of the scientists died, and others returned to their homes with but little more knowledge than before.

Between the years 1830 and 1840 several commissions which went out to the Orient to investigate the causes of bubonic plague accomplished a little more than their predecessors, especially that under the leadership of Dr. A. F. Bullard de Méru, a noted French physician who was highly honored by various nations in recognition of the excellence of his work. Most of the investigators came in direct contact with the disease, and as a result a certain number died; others never became afflicted. This peculiarity led them to conclude that the disease only affected those who were predisposed to it; and this, in turn, caused them to believe that the disease could be limited, first, by improving the hygienic conditions of life, and, second, by medical means, that is, by removing the predisposing conditions. They concluded that the disease could only be due to absorption from the lymphatic system, and must therefore gain access to the body by direct contact with the sick. As a result they separated the convalescents from those who were gravely affected. They also ordered that the rooms of the patients be disinfected and well aërated. The patients were nursed day and night. One of the great hygienic achievements of the commission of 1835 was to order the dead to be buried deeper and in lime. Up to that time the dead had been buried only a few inches below the surface, and this was, no doubt, one of the indirect causes of the spread of the disease. Medicinally, the enlargement of the lymphatic glands suggested that mercury and iodine would be good remedies, since they gave beneficial results in syphilis.

During various epidemics many observers had noticed that when an epidemic of plague occurred it was always associated with an epizoötic

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of high mortality among rats. This led several scientists to believe that there was a certain relation between the disease of the rodent and that of man. It was not, however, until Kitasato and Yersin discovered the plague organism in 1894 that the identity of the disease in man with that in rats was proven. They found that the bacilli recovered from the lesions in the rats and in the human beings were culturally and morphologically identical, and that both fulfilled Koch's postulates. It was not until the year 1906 that the Indian Plague Commission proved definitively that the plague was primarily a disease of rats, and was communicated to man by the rodents. After a series of investigations the same commission showed conclusively the following year that the disease is only communicated by means of insects, and especially fleas.

The conclusion reached, then, was that bubonic plague is circulated by rats, and, as those rodents are great travelers, it became essential to stop their travel to and from ships. Reports from the "Marine Hospital Service of the United States" of the year 1910 show that the health officers of San Francisco, London, and Bombay were quite successful in keeping down the migration of rats and in killing those which were on ships. They prevented the rats from getting on shipboard by fending off the vessels at least six feet from dock; by using a rat-guard on each mooring line, and by lifting up the gangways at night. The reports also show that fumigation by burning sulphur, when thoroughly carried out, is quite effectual in killing most of the rats in a ship. If, however, the work is done superficially, as is frequently the case, scarcely a single rat is killed, as the rats retreat to parts of the ship where the sulphur fumes do not penetrate.

In my experience during the past summer, on two successive voyages to Cuba and the Caribbean Sea, the fact was impressed on me that ship fumigation is commonly carried out superficially. The ship I was on was fumigated five times, viz., twice at Havana, twice at Belize (British Honduras), and once in New York, and as a result of all those fumigations the sole evident effect was the death of one rat. It is certain that rats appeared as numerous after as before the fumigation. A few days after one of the fumigations at Belize several young rats were caught in a trap. The failure was perhaps due to the fact that the health officers of either place did not fumigate the ship quite thoroughly. They only fumigated the cabin, crew's quarters, and the holds. The coal bunkers, fire and engine rooms, and other storerooms, as well as the bilges, were left unfumigated. I believe that to deal thoroughly with an empty ship it is essential to fumigate the crew's quarters, the chain lockers, the coal bunkers, and all the storerooms. Two or more bilge-boards should be removed from each side of every hold, and at least two sulphur pots placed in the most suitable bilges. Then a number of pots should be placed on the floor of each hold, and when all of these have been set on fire the hold should be tightly covered. The same procedure should be carried out in the fire and engine rooms and tunnel, viz., several floor plates should be removed and sulphur pots placed in several of the bilges and

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floors. This would allow the sulphur fumes to penetrate the whole ship, and would make it impossible for any living animal form to survive.

It is obviously impossible for anyone who is not familiar with the architecture of a ship fully to carry out these measures. Therefore one of the qualifications of health officers whose duties include ship fumigation should be a practical knowledge of a ship's construction.

RECONSTRUCTIVE PERSONAL HYGIENE:

The Curative Force of Expert Regulation of Conduct.*

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THE purpose of this and subsequent communications is to present evidence to show that clinicians possess in the judicious regulation of daily life and conduct a power of conservation and restoration of health which is too much neglected. In consequence of this neglect of valuable therapeutic resources, many irregular and unqualified exponents of mental and physical health are acting as advisers to thousands of intelligent citizens. More or less satisfactory work some of them do, but, being unqualified in fundamentals, having no systematic knowledge of the human organism in and out of health, they too often do vast harm through ignorance or pernicious zeal. The postulate is assumed that the subject of the conservation of health, and the reconstruction of those out of health, deserves the same minute, exact attention, the same scientific research and application, as other branches of clinical medicine.

The experience of the author warrants confidence in the efficacy of systematic regulation of conduct, especially in certain particulars hereinafter to be demonstrated, as a therapeutic measure whereby desired results may be obtained even after all other measures have failed. Oftentimes the conditions relieved, or clinically cured, were pronounced unrelievable or incurable by competent specialists. Hence it is the author's desire to bring the subject to the attention of the profession, and gain their co-operation, so that similar, or better, finalities shall be accomplished by them.

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* I expect to present in turn certain allied subjects and show their direct relationship to clinical medicine. Among these are:—

Mechanotherapy: a large subject, including as it should any and all mechanical agencies capable of exerting therapeutic effects.

Orthotherapy: correct posture as a basis for conservation and repair.

Elasticity of Tissues: a factor in physical betterment; mobility of gross structures in its bearing on organic adjustments and readjustments, the maintenance of functional integrity in the tubular and hydrostatic mechanisms, etc.

Tension and Hypertension: as a factor in normal and abnormal functionation in (*a*) the psychic and (*b*) the physical domain.

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I.

PERSONAL HYGIENE.—*Personal hygiene* includes the employment of various agencies concerned in conserving human efficiency by revising the conduct of life in the individual.

At the top stands *anthropology,* the science of man or mankind; the study of man's agreement with and divergence from other animals; of his physical structure, racial peculiarities, and intellectual nature; of the various tribes and races of men with reference to their origin, varieties, intermixture, customs, etc.; of the general physical and mental makeup and evolution of the human race. Anthropology puts under contribution all sciences which have man for their objective.

In the United States our people are a crude mixture of many races, some similar, some markedly dissimilar. The consensus of opinion is to the effect that, the purer the race, the more uniform the conditions; less of surprises and complexities occur.

A department of anthropology is *euthenics,* the science of raising the index of efficiency by improving conditions of environment. This, again, includes betterment of the race, the family, through suitable selections, matings (eugenics), and the habits of the individual (personal hygiene).

By personal hygiene we understand, determine, and apply improved rules of life and conduct—subjecting them to constant revision—whereby latent energies, inherent capabilities for growth, development, and repair, may be conserved, and human dynamics so enhanced and amplified as to fit the individual to become the best his or her personal endowment renders possible.

For convenience in teaching, we may subdivide the subject of personal hygiene into three component departments which overlap each other, but which deserve to be mentally visualized for practical consideration as separate lines of conservation:—

1. Conservative personal hygiene.
2. Constructive personal hygiene.
3. Reconstructive personal hygiene.

II.

The power of environment to modify human fitness for better or for worse is enormous and as yet undetermined.

The practice of medicine was commonly divided into two departments: (*a*) *prevention* and (*b*) *cure.* To these has been added a third, that of (*c*) *conservation.*

In pursuing methods for conservation there is also accomplished much of both prevention and cure. So forceful may the practice of conservation become as to prove the most important both to patient and to physician. Industries develop in proportion as rewards are offered. In the division of labor in medicine the only immediate reward for prevention comes through salaried positions such as those of organizations, boards of health, professorships of sanitary science, and the like.

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The chief rewards for the clinician come from the care and treatment of instances of disability and disease. The subject of conservation and sanitation have never occupied the attention which their scope and possibilities deserve, because there is so little remuneration from teaching or enforcing measures in these lines. The public is, however, beginning to realize the vast possibilities in learning and practising conservation; hence there is a growing demand for knowledge. Where there is demand there is always supply. The supply is being freely afforded by all sorts of persons who see where they can earn money by teaching how to improve living conditions. While some of these have good ideas, most of the ideas are founded on error; or rather, these persons give what the public wants, good or bad. The only solid ground for final success in human conservation is an adequate knowledge of the fundamental principles of medicine, from biology up to the last refinements of therapeutics. In the subdivision of specialism, therefore, there is need of experts on conservation, in personal hygiene. Here there is a field of research of increasing usefulness and reward.

Dogmatism is nowhere so out of place as in the teaching of personal hygiene. It is characteristic of science perpetually to revise, amend, and reject ideas and methods. Views and teachings on personal hygiene have varied and still vary because of diversities in individual taste, belief or ignorance. When the subject is taught in medical schools the teacher too often permits himself the largest liberty of rambling; he seldom takes the trouble to review critically the mass of valuable findings scattered plentifully through literature and talks like the pulpit orator, assuming the divine right to teach simply because he occupies the rostrum. The outline presented here is inadequate, but we claim that this subject should be accorded the same attention given to other branches of scientific medicine. It has points of contact with most of these. Some data and conclusions are cheerfully appropriated, others made to serve as component or contributory parts. Our object is to bring these correlative factors into harmonious interrelationships.

III.

1. *Conservative Personal Hygiene.*—This department of human betterment through regulation of conduct, large and varied as it is, may be here disposed of in a few words, that we may pass on to those inviting fuller consideration.

Under conservative personal hygiene we may include those commonsense measures, fairly well known and of recognized efficiency, which contribute to the maintenance of fitness in normal human beings, by improving environment, conduct, and life, in the physical, mental, and moral domains, thus encouraging the evolution of all inherent energies. Environment influences the tangible body and also the psychism. Everyone requires a constant revision in agencies for betterment, from cradle to grave,—to exercise a ceaseless vigilance and industry. Everywhere, and for all, there are difficulties to be overcome. No full development can be achieved except by struggle, competition, and unremitting endeavor. Victories or highest rewards not only gratify, but

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lead to increased powers, wider vision, mental and moral elevation; to the approbation of one's own conscience; indeed, to any height of endeavor, of character, to final oneness with the divine personality.

Memories are called forth, association processes stimulated, by chemical and physical agencies. Among the forces of environment producing reactions upon the consciousness, encouraging initiative, determination, selection, are chemical and physical forces such as light, darkness, heat, cold, work, rest, dryness, moisture, food, hunger, attention, sleep, etc., and always the mysterious and compelling force of electricity.

The main objects of life are to secure, appropriate, and eliminate adequate amounts of oxygen, nitrogen, carbon, phosphorus, and sulphur to meet the requirements of metabolism, and to convert these into, and maintain, healthy tissues.

Along with opportunity, there must also be intelligent guidance from within or without. Through experiences are formed habits of selection and rejection. The individual cannot be wholly receptive or passive, although to pursue conservative measures no large amount of effort is required. While it is desirable to accept with philosophy whatever state of life to which it may have pleased God to call one, the exigencies of every day, or week, call for some modification of existing conditions, making for improved ones, in temperature, ventilation, clothing, food, effort, attention, and the like.

To secure what is plainly desirable one must guard against deleterious agencies, between which we are steadily learning to differentiate with some accuracy. Among these are mosquitoes, flies, hurtful degrees of light, heat, fatigue, and the like. The subject involves the whole range of sanitation, federal, local, personal, in which the individual is first negative and next receptive, rather than active. Always the elements of fatigue must be reckoned with,—a peculiarly hurtful agency in the young. Fatigue, leading to exhaustion, is capable not only of impairing function and retarding growth, but also of damaging structure, devitalizing organs, opening the door to any or all sorts and kinds of morbific agents, infective or metabolic. Excessive and continued fatigue is capable of defeating the best agencies for conservation.

2. *Constructive Personal Hygiene.*—The factors in constructive personal hygiene are, first, an individual who is not impaired by disease, but is not up to the norm, whose deficiencies or defects are capable of demonstration or reliable inference, and, second, the selection and application of constructive measures, modifications of environment, capable of amplifying latent powers and leading toward the degree of development of which the individual is capable, in accordance with inherent powers and limitations.

Here we have at command all the powers grouped under conservative personal hygiene and many more. The task is to determine the nature of the concrete problem, its possibilities and its needs, and to make wise, active, and expert use of our resources consistently and persistently.

3. *Reconstructive Personal Hygiene.*—The factors with which we reckon are:—

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1. An individual of any age or condition in life whose constitutional vigor or health has been so depressed by disorder or disease in the physical or mental domain as to place him or her below the plane of customary efficiency.

2. The eliciting of all those forces for repair of existing causes or phenomena of disability which can be brought into action, and also the raising of the index of efficiency by bringing into the field of action hitherto unrecognized capabilities, rendering them available, till a higher plane of efficiency is reached than the individual has ever enjoyed before.

This can be done in more instances than is ordinarily regarded possible, and to a degree oftentimes far beyond expectation.

Among the reasons why this is not done as often as it can and should be are these: The individual, or those who exert (or should exert) authority over him, too often will not co-operate frankly, faithfully, and consistently with the adviser. Again, medical advisers are too often content to act merely as repairers of recognizable disabilities and to lose sight of their higher duty as conservators of latent powers of both health and efficiency. Nowhere in the domain of medical art does there lie larger opportunity for gratifying results than in this realm of reconstructive personal hygiene.

IV.

The world's most important conservation problem today is the development and direction of human intelligence.

Life, movement, being, depend upon the fullest capacity in the sentient mind, the cerebral mechanism, whereby our superiority over the lower animals is demonstrated. The ultimate destiny of our civilization will depend upon the degree of efficiency of thought-power in future generations. Greater mental efficiency is demanded not only in all modern industrial pursuits, but also in defensive and aggressive activities. Steps in advancing civilization are marked by increasing strains, burdens, insults, thrown upon the structures of the body, especially the most delicate of all, the brain and nerves. Each new crisis in civilization calls for the exercise of higher intelligence, increased cerebral capacity, better judgment, in "the man behind the gun."

Primary education, now in an unsatisfactory stage, is the domain in which best advancements shall be initiated. How to train the young child to evolve the best that is in him, at the earliest possible time and in such a way as to insure uniform, consistent progress, is the problem for today and all days. To this end much of the best modern thought is being devoted. Whatever else is taught, or not taught, biology should be included. No one can guide him or her self aright who does not learn to think in factors of life, growth, reproduction, and development.

Body and mind are essentially one as receptors and transformers of environmental influences.

The ideal aim of health conservators is to reinforce inherent energies, to perfect latent or impaired powers. It is but a limited conception of professional duty to merely repair damages or injuries, to overcome effects of

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disorders, or even to cure actual disease. In the field of restoration large individual abilities are exhibited by the exponents of restricted medical specialisms. Best effects are, even there, due to the wisdom shown in dealing with the broader factors involved in supplying constitutional needs. The solution of most of these problems often lies in estimating the exact status of the grosser mechanisms and in correcting many contributory disabilities not ordinarily recognized as significant.

Every person, young or old, is capable of a notable increase in vital dynamics by revising modes of life. This is particularly demonstrable as middle age approaches and tissue elasticity subsides. From earliest years the child begins to retrogress, to lose pliability, adaptability; to fall into one or another form or kind of disability. Some of these deviations merge into serious retrograde changes, often shown by rigidities, densities, caused by faulty habits or vitiated automatisms, due to omissions of suitable variety in both impulses and movements, whereby alone symmetrical action and reaction are assured. The factors involved are both psychic and physical. The deadening effects of routine, of monotony, are well known. Stimuli should be varied; suggestion or autosuggestion is rarely adequate to preserve vital rhythm. Individual resourcefulness is seldom great, or only exhibited in restricted and specialized lines. Hence it is of value to invite skilled direction from one who has achieved a well-rounded familiarity with human perfectibility, needs, and derangements, and can judiciously particularize.

(*To be concluded in the June issue.*)

Editorial

ITEMIZED OR AGGREGATE CHARGES FOR MEDICAL SERVICES.

THIS subject has been suggested somewhat indirectly by repeated discussions of charges for professional consultations by telephone. With the general proposition that the physician has a right to charge for advice given by mail or telephone we have no dispute, and especially in regard to night calls by telephone. But, when it comes to the practical details of estimating and collecting the amount due, various difficulties are encountered. A patient seldom consults a physician by telephone, independently of personal visits. In many instances a telephone message enables a physician to arrange his work at his own convenience; to postpone a night call till morning; to suggest precautionary examinations which add to his income; to correct misunderstandings which the patient might readily attribute, either in good faith or as an offset to a charge, to a failure of explicit directions. In our own experience, it has seldom seemed fair to charge for a telephone message and never expedient to do so.

From an entirely different standpoint, we get a hint as to the desirability

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of a change of method of charging for professional services. Allusion is made to the revival of interest in the matter of fee-splitting and commissions for reference of patients. It is true that this evil rests largely on the modern tendency to disregard pride and honor, and to make the dollar paramount as a measure of standing in society; and largely, also, on the keen competition due to overcrowding of the profession. But it must also be recognized that the evil represents a wrong way to attempt to right an existing wrong. What we mean is that, in a great many instances, average, perhaps conspicuous skill on the part of the family doctor, multiplied by much labor, plus heavy responsibility, plus considerable incidental expense, amounts to a small sum on the books, whereas skill of a higher grade, but not necessarily so (excessively) high, on the part of the consultant, multiplied by a small amount of time, plus practically no responsibility in the financial sense, plus a variable incidental expense, amounts to a large cash fee.

The allusion to responsibility requires some defense. The ordinary view is that the surgeon, subjecting a patient to the direct and conspicuous danger of anesthesia, plus those of shock, hemorrhage, sepsis, etc., and having to make the decision whether this risk shall be incurred or not, has to bear the brunt of responsibility. This view was correct a generation ago. But, today, so far as our experience goes, there is very little basis of fact in the reiterated complaint that the general practitioner does not send his operative cases to the surgeon early enough. Nor is the layman so averse to operation as was once the case. Both from the standpoint of professional judgment and the potential effects on "business," it now requires more careful consideration, more worry, and more responsibility to declare against than for operation. An operator with any degree of prestige—and, by virtue of his position, he may be said to have that prestige ready made, so far as the immediate case is concerned—really incurs almost no responsibility in the business sense. Provided that he is not positively deficient in skill or careless, it makes little difference to him, in the business sense, whether the result is favorable or unfavorable. On the other hand, the real responsibility of passing safely between the Scilla of operative neglect and the Charybdis of the danger and expense of unnecessary operation lies mainly with the family doctor. Even if the direct choice is made by the consultant, the former is still held accountable, for the laity hold that he ought to know what course should be taken.

It is not necessary to disclaim the implication that all doctors, like all men of the same grade in a union, should be paid alike. We believe thoroughly in the recognition of degrees of skill. There is no question, however, but that, in many instances, the surgical consultant receives a disproportionate fee, and that, sometimes, it is so disproportionate that the family physician who has done the hard and disagreeable labor, who gets little glory if the outcome is successful and much blame if it is not, has no compensation but a worthless charge on his books.

We may talk ethics till we are hoarse, but there is no real ethics in anything else than a square deal, and in this wicked world there are bound

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to be many men who will hold up the winner with whatever weapon they may have, when they find the cards stacked against them.

Why not go to the root of the trouble and insist on a square deal at the beginning?

Our conception of a square deal in this matter is as follows: If a second physician is summoned to a case to determine a single issue—for instance, to make a blood count, decide on the presence of a heart murmur, fit glasses, cut off a finger, or attend to any other isolated problem—let him make a charge independently, on the same basis with regard to the patient's means, credit extended, etc., as the regular attendant. If the consultant's work is extensive and deals with the case along the same general lines as that of the regular attendant, let it be understood that a joint charge shall be made for the laborious conduct of the case, according to its difficulty and the means of the patient, and that this fee, when collected, shall be divided equably—not necessarily equally—between or among the various attendants, with regard to the skill, time, and difficulty of labor furnished by each.

It may be held that, in taking this stand, we are partial to the general practitioner, and are making that good old gallery play about the poor, overworked, underpaid, family doctor. To offset any such impression, let us add that whatever unfairness in professional compensation has existed, and has been used as an excuse for the miserable practice of fee-splitting and commission business, is the fault of the general practitioner himself.

In the first place, who started the *à la carte* system of charging for medical services,—so much an office call, so much a visit at the house, so much per mile, so much for a long menu of professional ministrations embodied in a fee bill? The general practitioner.

Who is it that charges ten dollars for walking around a patient's bed, looking at his tongue, feeling his pulse, and asking a few questions of his colleague, and that makes a fairly careful examination of a similar case seen alone for two dollars? The general practitioner.

Who is it that treats a walking case of diabetes at a dollar an office call and throws in his analyses of urine, that carries a case of double pneumonia to recovery at two dollars a visit, and that will charge twenty-five dollars for cutting off a phalanx? The general practitioner.

Who is it that votes for a fee bill establishing a uniform charge for house visits and that decorates his office with a fancy sign reading "Office consultations one to ten dollars"? The general practitioner.

Is it any wonder that the laity are willing to pay a higher fee to the man who poses as a consultant; that they expect a routine charge for routine cases, and are willing to pay according to skill, when they encounter a physician whose practice is mainly confined to the office; or that they attach a higher value to the simplest surgical procedure done by a tyro than to the solution of the most recondite problems of physiology and pathology by an expert internist?

Let chemic and mechanic, bloodless and bloody, professional work be gauged by the same standards of time, skill, and study which they require

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for their performance, or, rather, for preparing to perform them. Let consultations be more highly paid than routine attendance, not because of the name, but because of the actual greater skill of the consultant, the actual employment of highly specialized diagnostic and therapeutic measures, and the fact that professional services are, so to say, focused at such times. Let the "case" be made the unit of professional charges, in analogy with other professions and businesses which do not deal with measurable commodities. And, finally, let all who attend a case be placed on the same footing, with due regard to actual, not specious, differences in value of services.

A. L. BENEDICT.

Cyclopedia of Current Literature

ABORTION, TREATMENT OF.

All treatment of abortion must have as its basis the knowledge of what is in the uterus, and what is the best method of removal. The period of pregnancy having been determined, the expelled material having been examined, one can with a fair degree of certainty say if the abortion is complete or incomplete.

According to the author, there are four indications or methods of treatment for incomplete abortion, depending upon the condition of the cervix, the contents of the uterus, the urgency of the symptoms, and by whom the treatment is to be carried out:—

1. If the cervix is soft and dilated, and the amount of blood flowing through it is not alarming, (*a*) one can wait a while and leave the case to nature; (*b*) one can pack the cervix and vagina with sterile gauze and again give nature a chance to complete the work already begun; or (*c*) if the cervix is insufficiently dilated, one can dilate it and remove the retained contents with the gloved finger.

2. If the cervix is not much dilated, yet there is moderate hemorrhage, the best treatment will be to pack the vagina tightly with gauze until dilatation is sufficient and then treat as in the first method.

3. If the cervix is soft and dilatable, and haste is imperative, as for severe hemorrhage, or if nature has proven unable to complete the work after a fair trial, the cervix should be dilated with the gloved finger, the safest of all curets, the finger carried up into the uterus, and all foreign material removed by it. If the cervix cannot be dilated by the finger, the metal dilators will have to be used.

4. Remove the contents with a metal curet after using the metal dilators. This method is one requiring serious consideration, for there is probably no greater source of danger in the treatment of abortion than to fail to provide for asepsis. While some believe that the curet should be used in all cases of abortion, complete and incomplete, to be sure that the uterus is clean and prevent future uterine troubles and abortions, others do not use the curet unless it is clearly indicated by some pathological condition.

In septic cases, if the infecting agent is streptococcus, by the time the infection is diagnosed the poison is beyond

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the reach of the curet, and this instrument only opens up new avenues of entrance. If the infection is from decomposition of the retained contents, these can be removed better by the finger, to be followed or not by saline irrigation; the temperature will soon fall and the pulse become slower, indicating that the work done has been sufficient. V. W. Harrison (Virginia Med. Semi-Monthly, April 11, 1913).

ACNE, TREATMENT OF.

The local treatment of acne is discussed by the author under four headings: surgical, chemical, electrical and mechanical.

Surgical treatment includes the expression of comedones, incision of pustules, and curettage of the thick, indolent skin which is studded with blackheads.

Chemical treatment comprehends the use of such keratolytic and antiseptic agents as resorcin and sulphur. As a local application, the author prefers the following lotion:—

℞ Zinci sulphatis,
Potassæ sulphuratæ,
Sulphuris præcipitati, of each 3j.
Aquæ, ℥iv.
M. Sig.: Apply at night.

Electrical treatment has its advocates. The X-ray may be used with two ends in view: first, to increase the blood-supply to the part and improve resistance, or second, to cause an atrophy of the sebaceous gland with attendant diminution of function. The high-frequency current is often effective in reducing the induration of nodular acne by its local influence on the circulation.

Mechanical treatment is a term used to include the process of expressive massage or local manipulation designed to facilitate the drainage of the sebaceous ducts.

The author is convinced that the keynote to successful treatment in acne lies in keeping open the orifices of the follicles. For this purpose nothing gives results superior to resorcin. In from 10 to 15 per cent. paste this causes an almost imperceptible superficial exfoliation. If the skin is thick, sluggish, and oily, as is usually the case, preliminary washing with the tincture of green soap is of service. The use of hot water, recommended by many, is particularly to be deprecated from the point of view of cosmetic results, since it serves to relax further a skin already deficient in tone and thereby contributes to the formation of enlarged pores. While warm water may be used after incising pustules, to encourage bleeding, the regular use of cold water in washing seems preferable.

When the existing pustules are cured and the superficial epithelial cells somewhat macerated by resorcin, the dermal curet is of service.

The bacteriologic flora of acne is of no importance except in treatment by vaccines, and vaccine treatment will not be necessary when one is able to provide for the drainage of the ducts. E. D. Chipman (Journal of the American Medical Association, February 22, 1913).

APPENDICITIS, CHRONIC, SIGN INDICATIVE OF.

Chronic concealed appendicitis without active inflammation is difficult to diagnose. In a patient who consulted the author for an obstinate hyperchlorhydria, with a history of repeated attacks of appendicitis, he observed on examination that continuous firm pressure with the ends of the first three fingers over McBurney's point induced a referred distress or pain in the epigastrium or precordial region. Later the

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patient had a recurrent attack of acute appendicitis which necessitated immediate operation. The appendix was found to have sloughed off. The patient made a complete recovery and there was no return of digestive disturbance.

In many subsequent cases of chronic appendicitis with digestive symptoms, the author was able to induce referred pain or distress in the epigastrium, left hypochondrium, umbilical, left inguinal, or precordial region by a continuous firm pressure over the appendix. He found this test very valuable in deciding when and when not to recommend operation. All of the patients on whom appendectomy was performed fully recovered from their digestive trouble. It was usually found on operation that the appendix was distorted, adherent, or contracted, and there was nearly always a history of a previous attack of appendicitis. The digestive symptoms were caused by an impingement on the nerves, which reflexly induced a perversion in the secretion of gastric juice. C. D. Aaron (Journal of the American Medical Association, February 1, 1913).

ASTHMA, TREATMENT OF BRONCHIAL.

The use of epinephrin in a fine spray, to be inhaled by the patient, is advocated by the author in asthma. He has devised a small atomizer, suitable for carrying around in the pocket, and with which the patient can arrest a paroxysm whenever he feels it coming on. The ordinary 1:1000 solution of epinephrin is placed in the atomizer, and upon pressing the bulb is broken up into a spray so fine that it can be driven through a narrow tube coiled on itself. This fine division is essential, if the remedy is directly to reach the bronchioles, which it tends to dilate. In established severe attacks, the following combination is recommended: Epinephrin solution, 9 c.c.; atropine sulphate, 0.01 Gm.; cocaine hydrochloride, 0.025 Gm.; distilled water, 1 c.c. No ill effects were ever observed from the spray. The action of epinephrin thus administered appeared to be of greater duration than where larger amounts were injected hypodermically. The intervals between attacks were prolonged and the attacks themselves rendered less severe. C. Staübli (Münchener medizinische Wochenschrift, January 21, 1913).

CARBUNCLES, BOILS, AND PYOGENIC INFECTIONS, SULPHURIC ACID IN TREATMENT OF.

The authors report results obtained by the administration of dilute sulphuric acid in cases of staphylococcic and some streptococcic infections. The treatment consists in giving internally the dilute acid in 20- or 30- minim doses, each dose diluted with 2 oz. of water, every four hours. In cases of carbuncle treated by this drug in large doses (small doses are not of the slightest use) changes are observed to take place in the following order: First, within twenty-four hours the infiltrated area of tissue becomes strictly circumscribed; then the slough is observed to soften; during the next few days pus is freely discharged, and the whole affected area shrinks and healthy granulation tissue forms, filling up the cavity until the part is healed. Cicatrization takes place in a comparatively short time. The only external application is a dressing of carbolized petrolatum (1 in 20).

In cases of what would appear to be streptococcic infection, such as those resulting from abrasions, or punctures by bones of "high" game, or inoculation by

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decomposing animal matter, the patient showing early symptoms of septicemia, the high temperature is quickly reduced and the pain and swelling and malaise gradually subside, the patient progressing uninterruptedly toward convalescence. Where the lymphatics are inflamed and the glands enlarged and painful, these conditions in a few days also disappear.

The authors have treated in the same way blind boils, which are aborted and completely disappear. Recurrent crops of boils and pimples in different parts of the body, and severe cases of acne have been found to yield readily.

The remedy was also tried in other conditions where pyogenic organisms were responsible for some of the symptoms observed, *e.g.*, cases of bronchiectasis and pulmonary tuberculosis. These were found to be benefited; the sputum became less purulent and much less in quantity, and in tuberculous cases the fluctuations of temperature were diminished. John Reynolds and R. J. Reynolds (Lancet, March 15, 1913).

CARCINOMA, COLLOIDAL COPPER IN.

In a previous paper the authors had stated that by frequently repeated injections of colloidal copper they had been able to cause a retrogression in the majority of cases of carcinoma. Almost all of the cases experimented upon had been inoperable ones. They now report further observations made in 19 cases. Rapidly growing tumors, which lead to extensive metastases in the internal organs, and those in which cachexia is pronounced, cannot be benefited by the treatment, but in the large majority of all other cases which must be considered inoperable the injections cause gradual retrogression of the tumor; usually there is a marked diminution of pain.

In a number of cases, unfortunately, there is a gradual decrease in the effect of the injections, though in others the healing processes become perhaps more marked after the twentieth injection. The most important result of the investigations is that we now have the means at hand to cause a gradual, although only partial, retrogression of the large majority of inoperable cancers, provided they have not yet progressed to the last stage of the disease. The action is too slow, however, to render it probable that in most cases a cure will be accomplished by this treatment.

In two cases there was observed, as the first effect of the injections, a gradual springing up of granulations from the bottom of ulcers. The proliferative energy of the connective tissue is very probably increased. The degree of response to the treatment varies somewhat in different cases; some show a very strong reaction, while in others it is less marked. The majority of human carcinomata are more amenable to the influence of colloidal copper than is mouse cancer. Leo Loeb, H. N. Lyon, C. B. McClurg, and W. O. Sweek (Interstate Medical Journal, January, 1913).

DESICCATION AS A THERAPEUTIC MEASURE.

Drying probably does more toward limiting the spread of contagion than any other agent save oxygen and light. It acts in at least two ways: By simple dehydration of the protoplasm of bacterial cells life becomes extinct because of disintegration of the proteid. Again, by dehydrating the media in which such bodies live, as culture media, blood-serum, pus, and other fluids, infection is resisted because of the interference with

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growth, motility, and migration of bacteria.

Quite a school of surgery has developed about the dry treatment of wounds. Good surgeons will never wash a clean uninfected incision when dressing it, not even moistening the gauze to loosen it from the wound. Burns are best treated by dry methods.

If moist measures, such as compresses, oils, etc., are used, infection is more liable to occur, with ulceration, scarring, and a whole chain of ills that follow in the wake of infected burns.

Dry methods in the treatment of ulcers are among the best employed. Simply keeping a leg ulcer exposed to the air, lightly dusted with aristol and stearate of zinc, is a most effective way to treat it, especially if the patient will lie down and elevate the leg and protect it from flies and dust with a diaphanous layer of gauze. R. L. Pitfield (Therapeutic Gazette, March, 1913).

DIABETES MELLITUS, THE DIET IN.

Summarizing the most recent views on this question, the author states that one of the principles which it is now considered necessary to adopt is to abandon all attempts at a routine diet for these cases. The individual patient must always be considered, although a few general rules are to be followed. In the first place, hyperglycemia must be combated, for it tends to lower the utilization of carbohydrates by the body. It is to be borne in mind that the degree of glycosuria does not exactly parallel that of hyperglycemia, especially where the renal function is not normal.

If carbohydrate tolerance is low, this fact is not to be construed as an indication for the ingestion of an excess of meat. Vegetables are to be preferred. In all grave cases meats are dangerous, for the glycosuria may increase when they are taken and an unfavorable effect on the general condition is exerted. In prescribing a vegetable diet, those articles should be chosen which, while containing a high percentage of carbohydrates, are readily assimilated in the case under observation. The diabetic patient, as a matter of fact, needs fewer calories than the healthy individual, and a reduction in the amount of meat taken will not weaken him. The effects of the oatmeal diet are of significance from the prognostic standpoint. Where this measure does not increase the glycosuria the prognosis is good. To require the diabetic to ingest a large amount of fats is oftentimes a dangerous practice, as it may bring on acidosis. In the obese it is definitely contraindicated. A well-developed intestinal bacterial flora is useful to the glycosuric patient for defensive purposes, as starch then undergoes fermentation in the intestine and there are formed easily assimilable carbohydrate acids which do not become converted into grape sugar. Graul (Münchener medizinische Wochenschrift, February 25, 1913).

ECLAMPSIA, TREATMENT OF PUERPERAL.

The author refers to the fact, shown by Sellheim, that the mammary glands are partly responsible for the phenomena of intoxication known as eclampsia. The amount of colostrum produced is usually increased in this affection, and Sellheim believes that this is due to an effort of the gland to eliminate toxic substances contained in it. He has even advised operative removal of one or both breasts in order to relieve the system from the effects of these substances. The writer of the present paper believes that similar benefit can be obtained by

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merely squeezing out the colostrum from the breasts. In 11 cases treated under his direction this procedure was carried out thoroughly, apparently with beneficial results in most of the cases. G. Walcher (Zentralblatt für Gynäkologie, October 19, 1912).

EPINEPHRIN, ACTION OF, ON VEINS.

Considerable interest attaches to the action of epinephrin on the great veins near the heart. It has long been known that in the mammal the great veins, which correspond in some ways at least to the sinus venosus in the frog, beat rhythmically with the heart proper. The authors had previously been entirely unsuccessful, however, in obtaining a spontaneously contracting ring preparation of the superior vena cava. They have now found that a quiescent ring preparation of the superior vena cava of sheep, near the heart, can be made to beat vigorously and rhythmically by the action of 1:20,000 epinephrin. The action of the drug is a continuous stimulus to which the muscle responds by discontinuous (rhythmic) contraction. The experiments further indicated that the accelerator-augmentor nerve-supply of the heart and the rhythmically contractile tissue extend up the superior vena cava for at least 6 to 8 mm. from the venoauricular junction in the sheep's heart. The induction by epinephrin of rhythmic contraction in the quiescent superior cava, seems to the authors, on the whole, in accordance with the myogenic theory of mammalian heart rhythmicity.

It was also shown by the authors that 1:100,000 epinephrin, acting upon ring preparations of veins remote from the heart—jugular, mesenteric, superior and inferior vena cava—caused a diminution in their caliber, as has already been known to be the case with arteries. These veins therefore probably contain venoconstrictor fibers from the thoracicolumbar sympathetic system. J. A. Gunn and F. B. Chavasse (Proceedings of the Royal Society, Series B, March 6, 1913).

FETAL PRESENTATION AND POSITION, DIAGNOSIS OF.

The author urges the more general use of abdominal examination for the diagnosis of fetal position and presentation, believing it to be more safe and in the majority of cases for practical purposes more satisfactory than the vaginal and combined methods now in vogue. Describing abdominal examination, he states that it may be divided into (1) abdominal palpation, and (2) auscultation, both of which should be practised before and after labor begins. The examination should, if possible, be made on a table. The examiner, facing the patient's head, first outlines the long diameter of the child by placing the palms of both hands on the patient's abdomen, and after locating the fundus, the fetal end occupying it is determined, the breech giving the sensation of a large irregular nodular body, whereas the head gives the sensation of a hard round body, which is freely movable and ballotable. Having determined whether the case is either a breech or head presentation, one next determines if it is in a right or left position; by careful palpation, applying the palms of both hands to the side of patient's abdomen, one feels a hard, resisting body on one side, which one recognizes as the back of the fetus. One next notes whether it is directed anteriorly or posteriorly.

Knowing the location of the breech, head and back of the fetus, the next point to determine is whether or not the

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presenting part is engaged, and also if the head is extended or flexed, thus determining whether or not one is dealing with a face or vertex presentation. By grasping the lower portion of the abdomen just above the pubis with the thumb and fingers of one hand, a hard body will be felt. If the head be presenting there is felt a hard, movable body, easily ballotable, whereas, if the breech be presenting, there is felt a soft irregular body. If the presenting part is not movable, one knows that engagement has taken place. If engagement has not taken place in head presentation, and by careful palpation with both hands one determines that the greatest cephalic prominence is on the same side as the small parts, one knows that the head is flexed and that there is a vertex presentation, whereas if the greatest cephalic prominence is felt on the same side as the back, the head is extended and one is dealing with a face presentation.

If labor has begun and the presenting part be engaged, the examiner faces the patient's feet and with the tips of the fingers of both hands placed just above the pubis, depression is made in the direction of the axis of the superior strait; the extent of engagement can be determined in this way. The diagnosis between face and vertex presentation can here also be made by determining on which side the greatest cephalic prominence is located.

Having determined the presentation and position of the fetus, as well as the approximate extent of engagement, one may obtain further information by auscultation. In a head presentation the fetal heart sounds are usually heard best midway between the umbilicus and the anterior superior spine of the ilium, whereas in a breech presentation these are best heard on a level with the umbilicus.

The next point to be considered is, How shall one determine the probable time at which delivery will take place? The extent of engagement can be determined by deep abdominal palpation, and the following facts will also assist in determining this: (1) whether the woman is a primipara or multipara; (2) the character, intensity, and duration of the pains; (3) the bulging of the perineum as seen during the pain. The pressure symptoms on the bladder and rectum might also be taken as an indication of delivery.

One objection that can be urged against abdominal examination is the difficulty in palpating the fetal parts in extremely fleshy patients and in cases of polyhydramnios. But even in these two conditions pressure on the opposite side of the abdomen with one hand, while palpating with the other, will often enable one to feel distinctly the fetal parts. W. D. Phillips (New Orleans Medical and Surgical Journal, February, 1913).

HEART, HIGH PRESSURE HYPERTROPHY OF.

Reference is made by the author to a particular group of hypertension cases, viz., those without notable thickening of the superficial arteries and no renal changes of importance. This condition is common in men and comprises, in the author's experience, a rather large proportion of women of middle age. The patients are usually robust, stout to obese, and past 50 years of age. In men syphilis at times plays a part, but the writer does not think that alcohol is to be blamed. In the majority of cases there had been mental strain and heavy responsibility.

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The symptoms complained of were usually respiratory or gastric in nature, rarely such as to direct attention to the heart and vessels. One-half to two-thirds came complaining of indigestion and bloating after meals. A majority of the remainder noticed shortness of breath on exertion. A few were first troubled with vertigo, with numbness and tingling of the extremities, or with ringing in the ears. The heart in these cases is found enlarged, often far beyond what one would expect from either the symptoms or the physical appearance and capacity of the patient, but the radials are either soft as in youth or a trifle thickened, like a thin-walled rubber tube. The urine may not show anything of importance except a slight increase in quantity. These patients pass much larger amounts of urine during the night than in the daytime. The blood-pressure is from 190 to 260 or even more.

The hypertrophy of the heart is not due to valvular disease, though not rarely there is a systolic murmur at the aortic area without concomitant signs of aortic stenosis, the murmur indicating, evidently, sclerosis in the arch of the aorta. These cases are particularly prone to anginal attacks.

The course of the affection is largely governed by the state of the heart. Death finally results either from total failure of compensation or from angina pectoris, unless some intercurrent malady anticipates these two. Apoplexy occurs only infrequently.

In the treatment, the first and foremost measure is rest, mental rest being more important than physical rest, although the latter has its place. The diet is of importance, but more from the point of view of quantity than of quality. It may be wise to restrict somewhat the nitrogenous, more particularly the purin-containing foods. The patient should eat a small evening meal. In regard to stimulants, the author is more afraid of tobacco than alcohol, but usually restricts both, as the case may require. The bowels must be kept open. Many get comfort from a pill of phenolphthalein and rhubarb, or from the well-known compound licorice powder. An occasional dose of calomel or blue mass is useful. A simple hot bath or a short electric cabinet bath may at times be of benefit, but the latter ought not to be left to the uncontrolled discretion of the patient.

As for drugs, the nitrites are to be used only to relieve symptoms. Where nitroglycerin fails, sodium nitrite in doses of from ⅛ to 2 or even 3 grains may prove useful. Erythrol tetranitrate is a powerful vasodilator in doses of ½ grain, but often produces a painful fullness in the head. The continued use of the nitrites is of doubtful utility unless the pressure is rising, or there is angina pectoris, or marked dyspnea. In such cases they may be given over a long period in large doses. Sodium iodide is given two hours after meals, in water or milk. Many patients who are suffering from dyspnea and even from vertigo do well on small doses of digitalis. Either the tincture in from 5- to 10-minim doses three times a day, or the powdered leaves (¼ to 1 grain), is given.

Venesection is undoubtedly at times useful. It is safe to abstract in these cases up to a pint of blood, and if the pressure instrument is kept on the arm and the pressure controlled, one may take off 20 or 24 ounces. The relief from symptoms is often magical. David Riesman (American Journal of the Medical Sciences, April, 1913).

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HEMORRHAGE FROM BONE, ARREST OF.

In a great many operations where bleeding from bone was troublesome, as in fractures of the skull, sections of the skull for any purpose, or for tumor or Gasserian ganglion removal, amputations, resections, bone transplantation, and in osteomyelitis to prepare the cavity for iodoform or bismuth paste, the author has employed with satisfaction a procedure which consists in cutting a fragment of soft tissue, muscle or fascia, preferably muscle, from any convenient place in the field of operation and applying the fragment to the bleeding surface or edge of the exposed, broken, or cut bone by means of the fingers. If the tissue does not adhere at once it should be rubbed into the bleeding area by some suitable instrument, such as a knife-handle, dissector, or chisel, so that the vascular openings in the bone will become plugged with little fragments of soft tissue. The advantages are that the material is always present, does not require special preparation, does not act as a foreign body, and, according to the author's experience, is always efficient. G. T. Vaughan (Annals of Surgery, March, 1913).

HYSTERECTOMY, INDICATIONS FOR.

Myoma of the uterus furnishes the indication for the removal of this organ in rather more than half the cases. The chief indications for removal of fibroids is presented, the author maintains, by, and not before, the occurrence of symptoms. The latter vary remarkably in severity and variety. Hemorrhage, chronic anemia, malnutrition, and a weak and degenerated myocardium are not infrequent results. Pain, constant or intermittent, and of great severity, is not infrequently encountered. Pressure on the bladder, rectum, and uterus gives rise to complications. When a fibroid uterus gives trouble in any of these or other ways it should without hesitation be removed. There should be no waiting for the menopause in the vain hope of the disappearance of symptoms. Fibroids which give trouble before the menopause are apt to give more trouble afterward.

One hysterectomy in every eight done by the author in the last year was for carcinoma. He believes there is scarcely any kind of surgery more discouraging than this. The chief reason is the delay that occurs before these cases are brought to the surgeon. There were 8 cases of cervical cancer and 6 of cancer of the body of the uterus. In the cases of cervical cancer the average period elapsing between onset of symptoms and operation was exactly one year. In corporeal cancer the interval was greater, averaging two years and seven months. In 2 cases it was four years. This was certainly a poor showing considering the active propaganda for early diagnosis which has been in progress for several years. It seems clear to the author that these cases are brought to the surgeon not by the diagnosis, but by the development of such severe symptoms that the patient can no longer be satisfied by palliative and expectant treatment. Operation does but little more than relieve the mind of the patient and saddle the blame of the failure of treatment upon surgery. Practically the only cases of cancer of the uterus that he can claim to have cured are those that were operated upon before the disease had actually been demonstrated to be present. Until more reliable means of diagnosticating carcinoma in its incipiency have been devised it will be necessary for the profession to act upon

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shrewd tentative diagnosis if any progress is to be made in the cure of cancer of the uterus. The chief symptom upon which one must rely in the early diagnosis is irregular, excessive, or continued bleeding. This was mentioned as one of the initial symptoms in every one of the author's 14 cases. Pain was present in only 3 cases, and loss of weight in 8 cases, but these as well as other occasional symptoms were not early ones. Uterine hemorrhage should always be construed as a danger signal, and just as a lump in the breast should be considered as malignant until its innocence is proved, so should a bloody discharge from the uterus be regarded as due to carcinoma until the reverse is established. This is especially true in the cancer age, but to a less degree it applies to earlier ages, since one of the author's cases was aged only 26 years and another 36. John B. Deaver (American Journal of the Medical Sciences, April, 1913).

INDURATIVE HEADACHE AND ITS TREATMENT.

The symptoms, diagnosis, and treatment of this form of headache, which results from affections of the musculature of the head and neck, along with the cervical nerves, are discussed by the author.

The onset may be very acute. More often the affection comes on gradually. At first the attacks only give rise to sensations of discomfort and pressure on the head, but later increase in severity and frequency. They occur at variable periods and at times resemble attacks of migraine very closely.

Auerbach thinks that indurative (muscular) headache constitutes about one-fourth of all headaches.

On inspection of the cervical musculature in repose, swelling is frequently observed over the diseased muscles, though it is only prominent in a small number of cases. On palpation the affected muscles present a sense of resistance to the fingers. According as the different layers of muscles are affected the areas of induration give one the impression of circumscribed deposits in the muscles. Palpation of the muscular insertions often reveals thickenings. Pressure upon these muscles produces pain, generally diffiuse in character, and an increase of an already existing hypertension. This muscular hypertonus is a constant symptom. On auscultation of the diseased muscles with a small bell stethoscope, while slow, active, or, better, passive movements are made, fine crepitant sounds may be heard.

The diagnosis of indurative headache may thus be readily made by an examination of the affected musculature, but it should be always associated with a diagnosis by exclusion. A careful examination of the eyes, ears, nose, and pharynx should be made for conditions that might be responsible for headache. The presence of any organic disease of the central nervous system, meningitis, tumor, etc., should be ascertained for the same reason. An examination of the urine would exclude uremia and diabetes.

As for the treatment, in acute cases a brisk saline purge should be given and the patient confined to bed. The affected muscles should be kept at rest. Free diaphoresis at the outset of the attack often gives prompt relief. The application of heat for several hours by hot fomentations, hot bags, or thermaphores is of much benefit. While the salicylates are not of much use in the chronic cases, the acute cases are often

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remarkably benefited by full doses, given at hourly intervals three or four times before retiring. Colchicum and alkalies may be given if the patient is gouty. Locally applications of chloral, menthol, and camphor, equal parts rubbed together, give a considerable degree of relief.

Massage should be practised frequently and carefully. For a thorough cure all the indurations should be treated until they disappear completely and normal muscle tone is restored.

Vibration is recommended by Edinger and others, except in the case of patients suffering from arteriosclerosis.

The author has found the use of a rhythmically reversed electrical current of great value. Either the faradic, galvanic, or alternating current may be rhythmically reversed by suitable apparatus.

In chronic cases with marked fibrous changes, benefit follows the exhibition of iodide of potassium in combination with general tonics. Ionization with a 2 per cent. sodium salicylate or lithium iodide solution may also be practised.

The successful treatment of long-standing cases is tedious. In some cases the indurations are so firmly organized that only an amelioration may be expected. In acute cases from one month to six weeks may be necessary. C. C. Beling (Journal of the Medical Society of New Jersey, March, 1913).

INFANTILE GASTROINTESTINAL DISTURBANCE, CONSTIPATION IN.

Cases of gastrointestinal disturbance with sluggish bowel action, the author points out, are the hardest ones to treat and have also the largest mortality. The poisons of retained decomposed food in the intestines, especially in the colon, cause a decided systemic reaction, the most important symptoms of which are high fever, tympanites, stupor, very rapid or Cheyne-Stokes breathing, and even convulsions.

The author generally uses calomel, giving it in candy form, without water, and in a large, undivided dose. A 2-grain dose will not irritate the stomach any more than a $\frac{1}{10}$-grain tablet, and salivation is not to be taken into consideration in this initial dose, for, unless enough peristaltic action is stirred up thoroughly to empty the bowel, it is too late to save the child. An hour or two after giving the calomel, he orders a large dose of castor oil with about one-fourth of its volume of equal parts of aromatic syrup of rhubarb and port wine. The child is then laid down flat on its back and kept as quiet as possible to prevent vomiting. If the child is very sick, and there is doubt as to whether the cathartic is going to do its work in time to save it, he uses a colon-tube, and gives hot colon flushes until he succeeds in starting up intestinal action. The hot colon-flushes have a beneficial effect in two ways. They not only constitute the best means available of starting up peristalsis, but also induce perspiration and thus help to reduce the temperature. In very obstinate cases, better results are obtained from the use of a modified Noble enema, the formula of which is: Epsom salts, glycerin, of each, 8 ounces; turpentine, 1 dram, and water, to 2 quarts. This is given at about 110° F.

After good and sufficient results have been gotten from the cathartics and enemas, directions are given as follows: No nourishment other than toast water or a good quality of beef broth is to be given until the temperature is normal or nearly so. About a grain of calomel, in divided doses, and followed

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by a tablespoonful of the castor oil compound, is to be given every day at first, and, later on, on alternate days until the stools are quite normal. If the mucous lining has become so inflamed that a longer time than a few days is required for normal digestion to be re-established, a measured amount of well-browned toast may be added to the broth, or some form of beef juice to the toast water. This nourishment should be given at regular, but not too frequent, intervals.

As these chronic cases get better, and less mucus is expelled from the bowels, the number of days between the doses of castor oil is gradually increased and the use of such laxatives as cascara and phenolphthalein commenced. A good laxative to use after these bowel infections is, equal parts of aromatic fluid-extract of cascara sagrada and glycerin. H. M. Freeburg (Journal-Lancet, December 15, 1912).

LABOR, PRESERVATION OF PERINEAL INTEGRITY IN.

In trying to preserve perineal integrity any method which supports the head rather than the perineum will aid very considerably. The writer finds that direct pressure against the advancing head, carefully applied, during the pains is of material help. Supporting the head through the distended perineum, using the entire hand in doing so, answers very well, but in both methods one should remember to keep the occiput and later the nape of the neck pressed well up in the pubic arch. As the occiput passes out and extension occurs the head can often be shelled out of the vulva *between* pains. This must be done deliberately and carefully. Some judgment is required in knowing just the proper moment to accomplish it, but it is easy and simple, once the habit is acquired. In some cases the soft structures just beneath the pubic arch offer an obstruction to extension. As stretching of these structures occurs, the thin, sharp edge grasps the occiput, as it were, and holds the head down against the perineum. But when this is slipped back to the neck extensions will occur promptly and delivery be more quickly accomplished. In the opinion of experts this may not be good practice, but the author has been doing it for a number of years, and finds it a great help in most cases. There is a certain time when it should be done to obtain the best results, but this can be demonstrated only on the living subject. A. C. King (New Orleans Medical and Surgical Journal, February, 1913).

LEUKEMIA, TREATMENT OF.

The author presents a report concerning 5 patients treated with benzol. Four suffered from myelogenous leukemia and one from a rather atypical type of lymphoid leukemia. All but one had received X-ray treatment.

The benzol was usually given in gelatin capsules filled at the time of administration, though one patient took the drug in an emulsion, of which 2 teaspoonfuls equalled 15 minims of benzol. The drug was given soon after meals and at bedtime. The initial dose was 7 minims, which was soon increased to 15 minims. All patients complained of eructation of a gas tasting and smelling of benzol, and burning in the stomach was a common symptom. Dizziness was a complaint of two patients. As a rule the appetite was not disturbed, with one exception. The other four all gained in weight. No other medicine was given except the necessary laxative or occasionally the mixture of rhubarb and

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soda as a stomachic. As a rule the patients were kept at rest.

The chief notable results of the benzol medication were: (1) in two patients a marked rise in the leucocytic count for a few days; (2) a rapid fall in the number of leucocytes, which in 3 cases resulted in leucopenia; (3) a correspondingly rapid diminution in the size of the spleen, much more rapid than with X-ray exposures alone; (4) an improvement of the red-cell count and hemoglobin in all of the myelogenous types; (5) a rapid disappearance of the small though multiple lymph-nodes in the patient with lymphoid leukemia. In this patient the hemoglobin and red-cell count remained the same during the treatment; (6) stained specimens of blood showed early and increasing degenerated leucocytes, especially of all mononuclear types, including the lymphocytes and myelocytes. Degenerated forms were so numerous that it was difficult and sometimes impossible to arrive at a leucocytic formula.

In spite of the moderately disagreeable effect of the drug on the stomach, there was a notable improvement in the general condition of all the patients.

The author is impressed with the drug as a powerful agent, which is apparently a remedy of great promise in leukemia, but which employed carelessly may defeat the purpose of its use and produce an equally serious condition, namely, aplastic grave anemia, hypoplastic bone-marrow and a fatal termination. It would be best to use only pure benzol and to watch its effect by frequent examinations of the patient and the blood. It is advised that others make use of benzol in leukemia and thus add to the clinical proof of its work. Frank Billings (Journal of the American Medical Association, February 15, 1913).

MASSAGE IN THE TREATMENT OF CHILDREN.

Attention is called by the author to the value of massage in the treatment of malnutrition, rickets, and various other disorders in children. In children this valuable therapeutic measure has been largely neglected, and yet the results obtained in the majority of cases are better than in the adult.

Many observers have noted that babies in hospitals, but especially in foundling asylums, do not thrive as well after they have reached a certain period of convalescence from acute illness as they do under less favorable circumstances in their own homes. The reason for this is that in the majority of hospitals the baby is left in the cot all day, often with the bedclothes tucked in so snugly that the movements of the arms and legs are greatly impeded and the respiration and circulation are sluggish, so that he will not thrive so well as if he were picked up at the times of nursing and allowed to move his arms and legs more freely.

For babies convalescing from illness in hospitals or homes, or cases of malnutrition, massage is of great value. The duration of the treatment should not be more than twenty or thirty minutes, and during the first two weeks massage should be practised daily. After this three times a week is enough.

It is in cases of malnutrition, with loss of appetite, weak flabby muscles, and distinct pallor that the best results are noted. Great benefit is also obtained in rickets. By massage combined with other exercises the author has seen complete correction of the deformity due to scoliosis before there

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was little or any change in the vertebræ. From thorough trial of massage for constipation, the author is convinced that it is just as useful in children as in adults. Another group of cases in which massage is of advantage is in nervous children. Much can be accomplished by putting them to bed, carefully supervising the diet, and resorting to massage to keep up nutrition. In cardiac lesions in children the result of acute rheumatism, rest for many weeks and months, in order to allow the heart muscle to regain its tone, is imperative. But these patients will get up much stronger if after the febrile period has passed they are given massage, first with passive and then with restricted movements. John Phillips (American Journal of the Medical Sciences, April, 1913).

NEPHRITIS, ACUTE TOXIC, RENAL DECAPSULATION IN.

In 2 cases of acute mercurial intoxication decapsulation of the kidneys was resorted to by the author. The first case was that of a woman who swallowed 2 grams (31 grains) of the oxycyanide of mercury. Notwithstanding the early induction of emesis with ipecac, bloody diarrhea, obstinate vomiting, copious salivation, violent stomatitis and total anuria soon appeared. On the fourth day, the urinary suppression persisting and the general condition becoming worse, decapsulation of the right kidney was practised. The organ was greatly enlarged and hyperemic. On the following day, 15 c.c. of urine could be removed by catheterization, and on the succeeding days the amount progressively increased until, on the fifth day after the operation, 30 c.c. were obtained with the catheter and an additional amount was voided spontaneously. Nonetheless the general state became progressively worse, hematemesis and melena appeared, and the patient succumbed on the sixth day after the operation.

In a second very similar case, in which corrosive sublimate had been ingested, the right kidney was decapsulated on the sixth day. On the following day 150 c.c. of urine were obtained with the catheter, and after this the patient passed urine spontaneously. Hemorrhagic phenomena later appeared, however, as in the first case, and the patient died on the ninth day. In this case an autopsy was permitted. The stomach, cecum, and transverse colon were found ulcerated; the left kidney was enlarged and hyperemic, while the right appeared normal; the liver was enlarged.

Although neither of these patients was saved by the intervention, all chances of death by anuria were eliminated in each. The operation was well borne and in the opinion of the author should always be tried when toxic anuria has become established. G. Tiserand (Lyon chirurgical, January 1, 1913).

NERVOUS SYSTEM, EXAMINATION OF CEREBROSPINAL FLUID IN DISEASE OF CENTRAL.

Examination of the spinal fluid is of the greatest importance, both from a diagnostic and prognostic standpoint, in all instances when symptoms on the part of the central nervous system do not quickly subside. In syphilis of the tract there is practically always an increased cell count, increased globulin, or a positive Wassermann reaction. One or all of these findings may be present. A negative cell count, a negative globulin reaction, and a negative

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Wassermann reaction mean absence of syphilitic involvement of the central nervous system, although another system may be affected. The reduction test with diluted Haines's solution is present in practically all cases. In the author's series of cases it was absent only in 1 case of paresis, and in 1 of acute cerebrospinal fever. In the experience of other observers, it seems to disappear during the height of an acute attack of meningitis, only to reappear when the symptoms become less intense. Oscar Berghausen (Interstate Medical Journal, January, 1913).

ORGANOTHERAPY IN BRONCHIAL ASTHMA.

Paroxysms of asthma are due, according to the author, to a special condition of the nervous system and to variation in the composition of the blood, the latter abnormality, in turn, frequently arising because of disordered balance of the internally secreting glands, more particularly the thyroid, adrenals, pituitary, and reproductive glands. There occur not only eosinophilia and a pronounced general leucocytosis, but a disturbance of the respiratory process, whereby less oxygen is taken up and carbon dioxide accumulates. The excessive amount of carbon dioxide brings on the paroxysms of asthma. Marked success was had by the author in arresting the attacks with combined injections of 0.0008 Gm. ($\frac{1}{80}$ grain) of epinephrin and 0.04 Gm. ($\frac{2}{3}$ grain) of pituitary extract in about 1 c.c. (16 minims) of water. In 300 cases, mild and severe, in which this preparation was used, a second injection was required in only 10 instances to arrest paroxysms. The combination is deemed by the author more effectual than epinephrin alone. He considers the treatment a "physiological" one in that lacking normal constituents of the body are replaced. O. Weiss (Deutsche medizinische Wochenschrift, September 19, 1912).

OTITIS MEDIA, CHRONIC CATARRHAL, TREATMENT OF.

During the last few years the author has studied the relation of the Eustachian tube to catarrhal deafness, and he is of the opinion that the closing of this little tube is accountable for more trouble in this direction than anything else. The tube was obstructed in at least 95 per cent. of the cases; in the other 5 per cent. the tube had opened as a result of atrophic changes, and in these cases the hearing was worst.

It has become a common custom of otologists to confine the greater part of their treatment to the nose and throat, using as adjuvants such aids as massage of the ear by catheterization or Politzerization. But it is seldom that the Eustachian tube will open and remain open when treatment is stopped at this point. A rational treatment of stenosis of the Eustachian tube consists in using such measures as will allow the patient to massage his own middle ear during the interim of treatment. This is best done by the employment of suitable bougies which can be left in place for a sufficient length of time to insure this result. Within the past few years such bougies and sounds have been placed upon the market. The degree of patency of the tube is first ascertained, and then it is cocainized up to the drum membrane by means of suitable applicators. A small bougie or sound is first introduced, and when one is sure that it is beyond the isthmus and in the middle ear, it is allowed to remain in place for a half to one hour. This is

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followed by gradual dilatation at each sitting until one finds that the tube remains permanently open and that massage is effective with the Politzer bag. After the first month of treatment, these patients, as a rule, are very much encouraged.

In certain long-standing cases, however, this treatment accomplishes little; the ear drum and middle ear appear to be dead. In these cases the author has attempted to reactivate the part by the employment of injections of various medicaments into the middle ear. After proper cocainization he inserts a fine catheter (about the size of a ureteral catheter) into the middle ear. By means of a hypodermic syringe attached to the distal end of the catheter, he injects 5 to 10 minims of some slightly irritating but antiseptic solution, *e.g.*, a 10 per cent. argyrol solution. At the end of a few hours an inflammatory reaction takes place, until in most cases a transudation of serum occurs through the drum. This inflammation is very painful, but seldom lasts more than forty-eight hours. In the few cases in which he employed this treatment, the hearing was markedly improved. Harold Hays (New York Medical Journal, February 15, 1913).

OTITIS MEDIA, TREATMENT OF CHRONIC CATARRHAL.

The treatment of these cases is systematically described by the author as follows:—

I. Removal of the etiologic factors. (*a*) The prohibition of red meats, pastries, and concentrated saccharine foods, as well as the use of alcohol, coffee, and tea—except in small quantities. Oftimes it is the combination of food that does harm rather than any particular article of food itself; therefore a restricted diet should be prescribed consisting mainly of vegetables, fruit, and buttermilk; the meat of fowl, and eggs, are not objectionable. (*b*) The removal of insanitary surroundings and the encouragement of hygienic living. (*c*) Daily physical exercise.

II. Elimination of all accumulated irritants. (*a*) The emptying and cleansing of the alimentary canal—a process by no means as easily accomplished as is generally supposed. The author usually gives 5 or 10 grains of calomel, followed in six or eight hours by 1 ounce of castor oil, and this in turn, in three or four hours, by ½ ounce of magnesium sulphate and 1 dram of sodium bicarbonate in 6 ounces of carbonated water. After this, magnesium sulphate, 1 dram, is given daily before breakfast for from two to four weeks. (*b*) Bathing, the frequency and temperature being adjusted according to the individual temperament and need.

III. Rehabilitation and preservation of function. (*a*) The use of some form of alkaline alterative such as iodide of sodium or of strontium, 1 to 5 grains; salicylate of sodium or strontium, 5 to 10 grains, and 10 drops of tincture of nux vomica, well diluted, three times daily, immediately after meals. If there be a deficiency in hemoglobin some ferruginous preparation should be given.

(*b*) Locally: (1) Removal of nasopharyngeal and faucial abnormalities which are in themselves obstructing or through purulent or necrotic retention leading to absorption of toxins. (2) Keeping the nasopharyngeal membrane clean by the use of a non-irritating alkaline wash, administered by means of a nasal cup two or three times daily. (3) Stimulation and equalization of the circulation—both blood and lymphatic —around and within the tympanic

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cavity, by the use of vibratory massage with moderate pressure over the subglenoid fossa, in conjunction with gentle inflation of the middle-ear cavity with a stimulating vapor of chloroform, iodine, or menthol, two or three times a week.

Where the membrane is very relaxed and flabby, the author has in some cases noted improvement upon painting the posterior inferior quadrant of the membrane with tincture of iodine (25 per cent.) once or twice a week; in others, by painting it with flexible collodion. This should be practised cautiously and discontinued as soon as more than temporary discomfort is observed.

In several cases improvement followed the administration of small doses of thyroid extract. Good results were also seen after the administration of thiosinamine for some weeks in cases of well-defined adhesions. J. A. Stucky (Transactions of the American Otological Society, volume xii, part 3, 1912).

PERITONEAL ADHESIONS, PREVENTION OF.

While the introduction of foreign bodies into the peritoneal cavity is, as a general rule, to be avoided, the writer believes that, in cases where extensive raw surfaces have been exposed as the result of breaking down peritoneal adhesions, the best method to prevent the latter re-forming is to introduce several ounces of sterile vaselin oil before closing the abdomen, and then at the earliest possible moment to encourage peristalsis, firstly by hypodermic injections of pituitrin and then by enemata and by purgatives. The absorption of vaselin oil from the peritoneal cavity is not complete for at least ten days, and if during this period the bowels be kept moving a minimum of fresh adhesion will be secured. D. P. D. Wilkie (Lancet, March 15, 1913).

PITUITARY BODY AND DIABETES INSIPIDUS.

In discussing the relationship between the hypophysis and diabetes insipidus the author states that it is now well known that the secretion of the anterior glandular lobe of this organ is of importance in connection with skeletal development, and that excessive function of this lobe, as in the presence of adenoma, leads to acromegaly. The posterior or nervous lobe plays an important rôle in relation to tissue metabolism; disturbance of its functions brings on the adiposogenital syndrome of Fröhlich. Schäfer has drawn attention to, the intermediate lobe of the hypophysis or pars intermedia, which is rich in colloids. In animal experiments he was able to show that this part of the organ had a distinct influence upon the renal vessels and parenchyma, and that the diuretic action of the pituitary was not dependent on the secretion of the anterior lobe, but upon that of the posterior lobe and especially that of the pars intermedia. This relationship of the pituitary to the urinary function had already been suggested by numerous clinical observations. Thus it was known that acromegaly and the dystrophia adiposogenitalis are frequently accompanied by diabetes insipidus, that gummatous meningitis of the base of the brain, and in fact all tumors at the base and all local affections capable of influencing the hypophysis, sometimes lead to diabetes insipidus. In support of the facts experimentally shown by Schäfer the author reports the case of a woman of 37 years in whom, about two months after removal of a cancer of the breast, there developed metastatic lesions

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in various parts of the body, in particular in the hypophysis. Simultaneously there appeared marked thirst and polyuria, the volume of urine, which was of low specific gravity, varying between 10 and 19 liters, though toward the last it fell to 4 liters. At the autopsy, the kidneys, cerebrum, and cerebellum were found normal. Cancerous foci were found in various viscera. In the sella turcica, one tumor mass had completely obliterated the posterior lobe. The function of the latter had thus been destroyed, and the irritation occasioned by the tumor can have been exerted only on the anterior lobe and the pars intermedia, which was intact. The experiments of Schäfer having shown that the anterior lobe had no influence on the urinary secretion, the conclusion is reached that the insipid diabetes in this case was due to excessive function of the pars intermedia owing to irritation by the tumor involving the posterior lobe. Simmonds (Münchener medizinische Wochenschrift, January 21, 1913).

PITUITARY BODY, DIFFERENTIATION BETWEEN DISORDERS OF THE TWO LOBES OF.

The view is advanced by the author that skeletal overgrowth, possibly combined with certain cutaneous changes and hypertrichosis, is an indication of anterior lobe hyperplasia. On the other hand, certain types of adiposity with an increased assimilation limit for carbohydrates, often with dry skin, subnormal temperature and pulse, are characteristic of the metabolic disturbances from posterior lobe insufficiencies. Hypotrichosis and sexual dystrophy are common accompaniments.

Assuming the combination of these factors, certain not unfamiliar clinical syndromes, in which overgrowth is associated with adiposogenital dystrophy, can be explained. They differ from the accepted syndrome of Fröhlich not only in the absence of an hypophysial tumor with sellar enlargement, but also in their opposed skeletal features. Harvey Cushing (American Journal of the Medical Sciences, March, 1913).

PREGNANCY, USE OF SALVARSAN DURING.

For two years all pregnant syphilitic women under the author's observation were given intravenous injections of salvarsan in doses of 0.2 to 0.4 Gm. The injections were given weekly, each patient receiving from 4 to 6. Fourteen women who had shown during pregnancy manifestations of recent and active syphilis were thus treated, and each gave birth at term to a living child, generally of normal weight. None of these infants exhibited stigmata of inherited syphilis. Four of them died not long after birth, but in each instance owing to some accidental cause. Two women with syphilis of long standing, and who had already had several miscarriages, were enabled to carry pregnancy to a successful conclusion with the aid of the salvarsan injections. From these cases it may be concluded that salvarsan is not only not deleterious in pregnancy, but exerts a favorable influence on the latter. Jeanselme (Société médicale des hôpitaux de Paris; Semaine médicale, January 22, 1913).

PULMONARY AFFECTIONS, CAMPHORATED OIL IN PNEUMOCOCCIC.

A further contribution concerning the beneficial effects of large doses of camphor dissolved in oil in pneumonic and bronchopneumonic affections is presented by the author. Wet packs, hot or cold according to indications, and the camphor injections, were the only meas-

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ures used in the series of cases under consideration. The preparation used was a 20 per cent. solution of camphor in olive oil previously washed with alcohol. The injections were given by preference in the muscular masses posterior to the trochanter and proved quite painless. In cases of intermediate severity, in adults, the author injects 10 c.c. (2½ drams) of the solution; in grave forms 15 and even 20 c.c. (3¾ and 5 drams), one-half the amount being injected morning and evening. Every 10 c.c. contains 2 Gm. (30 grains) of camphor. In children he gives 1 c.c. (16 minims) for each year of age. The injections were always perfectly borne, and no toxic effects were observed. The treatment was continued throughout the course of the disease, which was generally somewhat shortened by it. In nearly all the cases, the first or second injection was followed by a lowering of temperature, diminution or disappearance of pain, markedly improved general condition, and pronounced relief from dyspnea. The auscultatory signs, however, remained the same. The mortality in the series was 11.5 per cent., whereas in a previous series not receiving camphorated oil it had been 24.3 per cent. Certain (Annales d'hygiène et de médecine coloniales; Presse médicale, March 8, 1913). [Some degree of caution is necessary in giving massive doses of camphor to cachectic or starved patients, owing to the probable deficiency of glycuronic acid in these cases, with consequent imperfect detoxication of the camphor and greater likelihood of poisonous effects. Ed.]

QUININE AND BROMINE, HYPERSENSITIVENESS TO.

The author reports a successful attempt to produce passive anaphylaxis with the serum of animals which had been given salts of quinine and bromine for a long period of time. He used well-developed rabbits and guinea-pigs, which were fed alike and all placed under the same conditions. They were given intraperitoneal injections of quinine or bromine salts daily until they were able to withstand without bad effects doses otherwise lethal. One of the animals was then bled, about 10 c.c. of activated serum being obtained, and the latter injected intraperitoneally or intravenously into another rabbit or guinea-pig which had not been treated with the salts. Forty-eight hours and sometimes even two weeks after the injection of the serum, an injection of a quinine or bromine salt was found to produce typical anaphylactic symptoms. The experiments were much more positive in the case of the quinine salts than with the bromine salts. E. Manoiloff (Centralblatt für Bakteriologie, January 23, 1913).

RHUS DERMATITIS, PROPHYLAXIS AND TREATMENT OF.

Prophylaxis.—The author, while conducting studies on the active principle of poison oak, poison ivy, and poison sumach, frequently protected himself against poisoning by simply washing the exposed skin surfaces within a few hours after exposure, using soap and hot water. Before thorough exposure, however, as in gathering the leaves or handling the dried plants, he prefers to anoint the hands, arms, and face beforehand, use gloves, and as soon after exposure as possible take a bath and change clothing.

Treatment.—Inasmuch as the poison, after alighting on the skin, takes some time to penetrate, the first thing to do is to prevent penetration by a soap and

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hot-water bath of the whole body, including the hair. No article of clothing should be donned that has been exposed to the poison. Itching is readily relieved by water as hot as can be borne, which is usually a pleasant treatment, and of itself assists cure. The following remedies may then be used: (1) Ichthyol collodion, 5 per cent.; the lesions are painted with it three times daily. (2) Potassium permanganate, applied frequently as a hot 2 per cent. (or weaker) solution. A 1 per cent. solution of oxalic acid is usually sufficient to remove the resulting stain of the skin. Another objection to the permanganate is that after its use, followed by oxalic acid, the skin is left severely cracked, which is especially disagreeable on the face and hands; this is met by soothing ointments or oils. (3) Magnesium sulphate in saturated solution, applied on gauze, covered with rubber tissue and a bandage. (4) Tincture of iodine. Like the permanganate, this destroys the poison. The official tincture is used, diluted with 9 parts of water. The rhus dermatitis disappears quickly, but is replaced by an iodine burn.

Where pustules have formed, the vesicles having become infected, the hot permanganate solution appears to be useless. Hot mercuric chloride solution should be used instead. E. von Adelung (Archives of Internal Medicine, February, 1913).

SURGICAL TUBERCULOSIS, TRYPSIN TREATMENT OF.

The conservative treatment of surgical tuberculosis, the author points out, is gaining ground fast. Of the many substances used for "modifying injections" in these cases, he has obtained comparatively the best results with injections of trypsin. He found by experiments upon animals, and subsequently upon himself, that subcutaneous injections of freshly prepared trypsin, in certain quantities, were practically innocuous. The toxicity of most ferment preparations appeared largely due to the products of decomposition arising from bacterial action. The only one which proved satisfactory in every way was the so-called "injectio trypsini," sold in glass ampoules holding 1 c.c. The trypsin is dissolved in 60 per cent. of glycerin. After almost two years the ferment strength in these remained unimpaired. They were also first in the strength of their ferment action. Doses up to 3 c.c. produced absolutely no ill effects.

Trypsin diffuses slowly from the tissue into which it is injected. Nevertheless its action upon normal tissue is practically *nil*. Its introduction into tuberculous tissue is followed, generally in a few minutes, by slight smarting, which only in a few cases reaches any intensity, and is always quite bearable. Sometimes a slight rise of temperature is noted. The local reaction is, as in the healthy, very often quite insignificant.

Of great import are the changes observed at the seat of the infection. These are most typical in tuberculous abscesses of all kinds. The color and consistency of the pus change gradually, and the formed elements disappear; the fluid first obtained from such an abscess at this stage is brownish and of syrupy consistency, but later it becomes thin and serous. Often after a few injections not only do the masses of pus resolve and become amenable to absorption, but the focus of tuberculous inflammation itself undergoes a gradual change which starts recovery. After each injection the nodular infiltrations soften, disintegrate, throw off cellular detritus,

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and finally liquefy and undergo absorption, while from all sides healthy tissue proliferates abundantly. Suppurating sinuses from tissue or bone soon get much smaller: the secretion loses its purulent character, and later disappears completely. The sinus loses in depth, and its walls soon show an inclination to cohere. Analogous changes are noticed in superficial tuberculous ulcers, whether primary or derived from deeper foci.

Typical granulating hydromata of the common flexor sheaths of the palm, as well as of the extensors, were improved, and the tendinous functions, which had been lost before treatment, restored in almost every case.

Röntgen pictures showed that bones profoundly destroyed in the course of disease may retain their regenerative powers and reassume, under the influence of trypsin injections, their original structure and contour.

Pains and tenderness disappear, passive movements are tolerated, likewise the active movements later, and, in more favorable cases, all the functions of the limb are restored. In the course of trypsin treatment, the tubercle bacilli disappear from local involvements. The treatment is simple and devoid of danger. Even out-patient treatment gave full satisfaction. The injection as supplied is diluted with sterile saline solution, 2 to 10 parts. The dosage is 1 ampoule of 1 c.c. one to three times a week until a definite change for the better is noticed, when the frequency of the injection may be diminished. The fact must not be overlooked that ferment solutions are destroyed by heat above 80° C. The injections should be *strictly subcutaneous;* after injection, the trypsin is distributed beneath the skin by gentle massage. There is no advantage in a remote muscular injection.

In dealing with tuberculous abscesses, puncture is carried out in the usual way, using either a trocar of medium size or a syringe with a wide cannula. The trocar is pushed into the abscess obliquely, avoiding reddened patches so as not to cause perforation; 1 to 2 c.c., diluted with 10 parts of sterile physiological salt solution, are injected. Very often 2 to 3 injections are sufficient.

Where there are sinuses, the better plan is to inject into the surrounding parenchyma, moving the needle so as to inject into as many places as possible around and into the sinus. In cases of ulcer, the author injects around it and underneath its base.

In synovial hydromata, he injects simply into the synovial sheath; to avoid too violent reactions, he starts with 0.2 to 0.5 c.c., using larger quantities only after 3 or 4 injections.

In tuberculosis of the joints he injects 1 to 2 c.c. at intervals of six to eight days. The injections are made in part directly into the joint, partly into the surrounding tissues. The undiluted injection is used in these cases.

The author considers trypsin the treatment of choice in all cases for which the use of iodoform-glycerin is usually recommended. The advantages are that the quantities injected are much less, the pain is not nearly so intense, and the danger of intoxication practically *nil.* He recommends trypsin in all cases with sinuses. Its particularly good effect permits it to be used even at the risk of forming a sinus, a result usually very much to be avoided.

Trypsin injections do not permit of a schematic treatment. One must be guided merely by the progress of the patient. General improvement follows the injections. Wilhelm Baetzner (Practitioner, January, 1913).

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TUBERCULIN, NOTES ON DIAGNOSTIC AND THERAPEUTIC VALUE OF A NEW FORM OF.

It is believed by the author that old tuberculin contains some substance which produces a positive reaction, perhaps by irritation, on apparently healthy individuals, and that if that substance be removed a positive reaction will more definitely indicate the presence of tuberculous disease.

On adding to 10 c.c. of old tuberculin 60 c.c. of absolute alcohol a cloudiness appears in the solution, which on standing for twenty-four hours settles as a precipitate. The supernatant liquid is again precipitated with absolute alcohol and filtered. The precipitate from both precipitations is dissolved in 10 c.c. of distilled water. This solution is again precipitated and filtered; the filtrate obtained from this is added to the first filtrate, and the whole evaporated to its original bulk (10 c.c.) at a temperature of 56° C.

It is then diluted with distilled water to form a 10 per cent. solution. If 1 minim of this solution be injected under the horny layer of the skin, a raised inflammatory area appears round the site of injection in from twelve to eighteen hours in known tuberculous individuals, but no positive reaction has been noted by the author in persons apparently free from tuberculous disease, such individuals being likewise free, according to their clinical histories, from any suspicion of tuberculous affection.

In early cases the reaction persists for three or four days, while in advanced cases it passes off in from twenty-four to forty-eight hours. The test was applied to 270 persons. Among 191 tuberculous cases the reaction was positive in 186; the remaining 5 were in the last stages of pulmonary tuberculosis and died within two weeks. In the other 79 negative cases no reaction whatever was noted, and in these great care was taken to exclude the possibility of a tuberculous infection, past or present. The reaction has proven of great value in the diagnosis of medical and surgical cases of tuberculosis, especially in cases of incipient phthisis otherwise in doubt.

A number of patients were also treated with the filtrate (for convenience termed T. F.), with encouraging results. The initial dose found to be most convenient is 0.001 c.c. This is increased every other day by from 0.0002 c.c. to 0.001 c.c., according to the reaction produced. It is easily borne and does not produce the untoward results so frequently given by other forms of tuberculin.

The supraspinous fossæ were used alternately for the injections, which were given deeply into the muscles every other day. Thirty cases of pulmonary tuberculosis thus treated for two months have all benefited thereby, as shown by a fall of temperature, increase in weight, disappearance or diminution of the moist sounds in the chest and the cough, as well as a subjective feeling of well-being. W. C. Lyons (Lancet, December 7, 1912).

TUBERCULOUS GLANDS OF NECK, TREATMENT OF.

The author states it was formerly his custom to treat all small single tuberculous glands, whether with or without sister-glands, (1) by removal of the portals of infection (tonsils, adenoids, etc.), and (2) by simple incision into the suppurating foci. This latter procedure led to many difficulties, since a secondary infection was often added. While experimenting in search of a better method of treatment, the writer began to pay more

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attention to general therapy and to treat the abscess with more respect. It was evident that if one could imitate nature and increase local edema and cell-proliferation before operation and then evacuate the caseous masses without infecting with other organisms, nature would be quite capable of dealing with the tubercle bacillus itself. A procedure which was finally hit upon and seemed entirely satisfactory was the production of a Bier hyperemia by the application of a simple elastic band about the neck for a few hours before opening the abscess.

Next, a very small straight incision into the gland is made, the contents evacuated by a dull spoon, using no force or rough manipulation and being careful not to break through the capsule nor to invade the protective phagocytic zone, and finally, without washing or wiping out of the cavity, a 2 to 4 per cent. solution of formaldehyde in glycerin introduced and the incision sealed.

The result is primary healing in 50 per cent. of the cases. Of the remainder, 30 per cent. have only a serous discharge, which ceases after 3 or 4 more injections, and the other 20 per cent. suppurate, more or less, according to the delicacy and completeness of the technique.

While using the above local treatment the author also imposed forced feedings, constant out-of-door life, and other approved constitutional measures.

The treatment of these simple cases was so successful that the methods were next applied to more extensive gland involvements. In these the enzymes of yeast, taken internally, were added to the treatment. Fifteen cases of the 85 thus treated did not respond satisfactorily and were then subjected to radical treatment; but of the remaining 70, 56 were cured, 10 were recent cases, 3 were lost sight of, and 1 died of intercurrent summer diarrhea.

From his experience with the measures outlined, the author is convinced that any superficial gland, or chain of glands, may be treated conservatively in this way, provided one is satisfied that the caseous masses are acting as foreign bodies. In the rapidly developing abscess of the adult, sequent upon a glandular tuberculosis, the method is also markedly efficacious, rapid healing taking place, with the minimum of suppuration. Large, multiple, deeply seated glands, on the contrary, are not to be dealt with conservatively. The term "radical operation" is, however, for cervical glands a misnomer. No operation can be radical, as the glands are so numerous that complete removal is impossible. Nature tends to cure; hence judgment as to treatment is necessary. J. S. Brown (Medical Record, January 4, 1913).

TYPHOID FEVER, IODINE IN.

Basing their procedure on the fact that leukopenia prevails in typhoid fever, and on the supposition that by increasing the number of leukocytes, the general condition of the patients might be improved, the authors administered iodine to 44 cases, either in the form of an aqueous solution or as the tincture, the latter in doses of 15 to 25 drops daily in a mixture of cinchona and malaga wines or in milk. Many patients brought to the hospital in an alarming condition, with profuse diarrhea, distention or nausea, appeared to improve under the influence of the iodine. The cases thus treated usually recovered quickly; relapses were not prevented, but those which did occur were not serious. The recoveries ap-

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peared to be more numerous under the iodine treatment than among other cases. The number of deaths among the 44 iodine-treated cases was 4. M. Arnozan and J. Carles (Journal de médecine de Bordeaux; Revue de thérapeutique médico-chirurgicale, March 15, 1913).

UMBILICAL HERNIA IN CHILDREN, RADICAL CURE OF.

An operation for umbilical hernias that have proven refractory to the customary non-operative measures is described by the author. The procedure was first suggested by Nota, of Turin, and has been carried out in his clinic 244 times. It consists essentially in placing a strand of elastic material around the base of the hernia, which is then reduced and the band tightened. The elastic band used is about 2 mm. in diameter and is sterilized by immersion for at least an hour in a 1.5 per cent. solution (by weight) of glacial acetic acid in 70 per cent. alcohol. The band is threaded through a thick, strongly curved needle, which is inserted through the skin at the base of (below) the hernia, carried entirely around the latter and brought out at the point of entrance. The hernia is then maintained in reduction by a finger and strong traction gradually exerted on the ends of the band until the walls of the sac are in apposition. With strong silk the ends of the band are then tied securely together, as near to the skin surface as possible, and then let go, leaving a short length protruding through the needle puncture. A dry dressing and compression bandage are finally applied. The band should pass about 2 centimeters from the circumference of the umbilical ring and even, if possible, through the fibrofascial layer of the abdominal wall in the median line. The traction is made by an assistant while the operator controls the sac and the orifice of the umbilical ring. When the maximum degree of tension is attained the band is held by forceps pressed down deeply on the skin, while the silk ligature is applied just above them.

The result of the application of the band is that in a few days all the soft tissues included within the ring formed —last of all the hernial sac—are cut through. In the mean time complete adherence of the peritoneal surfaces will have taken place and the hernial cavity have been obliterated. In twelve or at most fifteen days the whole elastic band is discharged through the opening in the skin, after which firm healing takes place around the umbilical ring. Fever almost never follows this operation. On the tenth day an examination is made to find out if the band is free and can be taken out. The wound is then cleansed with alcohol and a new dry dressing applied. An abdominal cloth bandage had best be worn for two or three months after complete recovery. Of the 244 cases operated, three-fourths were less than a year old; the maximum age was 9 years. In infants anesthesia was dispensed with; in the older children rapid general anesthesia with ethyl chloride proved amply sufficient. There was but one recurrence of the hernia in the series, and in this case a permanent cure was effected by a second intervention. Brun (Archives de médecine des enfants, September, 1912).

URETHRITIS, TREATMENT OF GONOCOCCAL, IN THE MALE.

For allaying congestion and irritation in this disorder, the author lays stress on the value of the fluidextract of aconite, prescribed for intelligent pa-

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tients every one to two hours, for unintelligent patients every three to four hours, in doses of 1 minim. The interval is doubled as soon as the physiological signs appear, namely, tingling of the sensory nerve endings in the lips, tongue, throat, and digits, perspiration, and a feeling of relaxation. It is surprising to see how many intelligent patients will speak of improvement in the symptoms after half a day of this treatment. The author usually limits unintelligent patients to a total of 6 to 8 minims in twenty-four hours. V. C. Pedersen (New York Medical Journal, February 15, 1913).

WHOOPING-COUGH, ICHTHYOL TREATMENT OF.

The use of ichthyol in pertussis is recommended by the author, after experience in its administration to several hundred cases. The formula he uses is as follows:—

℞ Ichthyolis, ʒiiss (10 Gm.).
Glycerini, ʒss (15 Gm.).
Liquoris calcis, ʒiiss (10 Gm.).
Olei amygdalæ amaræ, gtt. iij.
Olei anisi vel menthæ piperitæ, gtt. x.
Syrupi, q. s. ad ʒiiiss (100 Gm.).—M.

Children up to 1 year of age are given 4 to 6 teaspoonfuls of the syrup; up to 2 years, 3 to 4 dessertspoonfuls; 3 to 4 years, 4 to 5 dessertspoonfuls; 5 years and upward, 4 to 5 tablespoonfuls. These doses, especially the smaller ones mentioned, can be exceeded and even doubled in obstinate cases, those of long standing, or those complicated with capillary bronchitis or bronchopneumonia. The preparation is not toxic and in case an excess is used, will merely bring on slight diarrhea.

The efficacy of the preparation depends upon the length of time the trouble has been present. Where it is administered from the outset the disease is aborted in two or three days. The paroxysms of cough and vomiting, if already present, are rapidly overcome, the case becomes one of simple bronchitis, and the appetite returns. Where the affection has already been present for some time, energetic treatment is required, and the disease yields in from a few to ten or twelve days.

The author objects to the use of sedatives in whooping-cough, stating that though benefit may be evident at night, the condition in the daytime is rendered worse. As adjuvants to the ichthyol in young children, instillations of [weakly] mentholated oil in the nose should be made. An emetic and a purge at the beginning of treatment will favor the action of the ichthyol, and may be repeated later if a profuse flow of bronchial secretions sets in. The room should be kept well ventilated at all times, though the temperature should not be low. Where enteritis complicates the pertussis, only water should be allowed, but the ichthyol may be continued without hesitation. If broncho-pulmonary complications should appear, mustard baths and antiseptic inhalations should, of course, not be neglected. Finally, if hemoptysis should occur, diphtheria antitoxin should be injected and, in case of failure, hepatic extract also given.

The use of ichthyol had best in all cases be continued for a time after recovery, in order to antagonize the bronchitis,—the latter tending to favor a relapse. Naamé (Etudes d'Endocrinologie, Paris, 1913).

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Clinical Summary

Practical hints from articles and abstracts that have appeared in the Monthly Cyclopedia and Medical Bulletin during the current year.

Albuminuria. TREATMENT. Prophylactic doses of Roux's antidiphtheritic serum in 128 cases of scarlet fever found to lower greatly frequency of albuminuria in these cases. Anaphylactic effects extremely rare with this serum. In all cases of albuminuria originating from throat inflammation, as well as in albuminuria in general where other measures have proven ineffective, the serum should be given hypodermically in doses of 10 c.c. (2½ drams) every three or four days. *Galliot.* Page 36

Anal Fissure. TREATMENT. Conservative measures advocated in painful fissure. In examining for it have patient bear down, or blow in some orthoform. In treatment: 1. Apply thigenol on cotton on end of probe, which is then withdrawn, leaving cotton in position. 2. Patient to drink tumblerful of hot water an hour before breakfast, and another, either hot or cold, in evening. 3. To insure softness of motions: Tincture of cochineal and peppermint oil, of each, ♏x (0.6 c.c.); syrup of glycerin, ʒj (4 c.c.); soft paraffin, ℥j (31 Gm.). If this objectionable, add 20 grains (1.3 Gm.) of powdered cocoa, or 10 to 20 grains of powdered agar. Dose of the mixture, 1 teaspoonful 4 times daily. 4. Where constipation previously present: Some aperient, such as confection of senna, ʒss-j (2-4 c.c.), to be given in addition. 5. After bowels act: Patient to wash parts and apply some bland ointment, *e.g.*, one of eucalyptus. 6. Where violent sphincteric spasm and pain, dilate under gas, and, if sentinel pile present, remove with forceps. *Baldwin.* 109

Anemia. TREATMENT. Administration of olive oil and glycerin, equal parts, in gradually increasing doses two hours after each meal considered a valuable measure. *Bram.* 47

Appendicitis, Acute. TREATMENT. After operation in children: 1. Give warm saline solution by rectum, 8 to 10 ounces every two or four hours; administer slowly with catheter and funnel. 2. Feed with a decoction of crushed raisins, alternated with albumin water. 3. Open bowels as soon as possible. If no normal movement within twenty-four hours, give glycerin enema; use syrup of senna as routine aperient. *Stiven.* 37

Arthritis, Chronic. TREATMENT. Certain joint cases, rebellious to all other treatment, can be arrested by proper diet combined with colonic lavage. Breakfast: Cereal, small amount; toast with butter; imitation cereal coffee. Between breakfast and lunch: Buttermilk, 2 glasses; water, 1 glass. Lunch: Clear soup (or lettuce or spinach); 1 roast potato; 2 slices toast; imitation coffee. Between lunch and dnner:· Buttermilk, 1 glass; water, 1 glass. Dinner: Clear soup (or twice a week small amount roast chicken, or 1 egg); toast or lettuce; imitation coffee; apple sauce. Between dinner and bedtime: Buttermilk and water. Daily simple enema followed by high colonic lavage with about 1½ quarts normal saline solution, until washings return fairly clear. Adapt diet to individual caloric needs and with constant regard to weight. *Pemberton.* 45

Arthritis, Gonorrheal. TREATMENT. A. Acute. 1. Sodium salicylate, 1 to 4 drams (4 to 6 Gm.) or acetyl salicylic acid, 20 to 30 or 40 grains (1.3 to 2.6 Gm.), freely diluted, during febrile stage. 2. Where intolerable pain and insomnia or threatening rupture of synovial membrane or subluxation, puncture, repeated if necessary, and active counterirritation. 3. In suppurative and grave forms, arthrotomy, either simple or followed by iodine or zinc chloride. 4. Passive movements and massage, when acute symptoms subsided. Other available measures: 5. Antigonococcic vaccines. 6. Antimeningococcic serum. 7. Autoserotherapy. 8. X-rays or radium in obstinate cases. 9. Bier's hyperemia. 10. Hot-air treatment especially; air in hot-air-box at 175° to 210° F., for one-half to one hour at a time. B. Chronic. Additional special measures: 1. Disinfection of genitourinary tract. 2. Thyroid substance, 2-grain (0.12 Gm.) cachets one to three times daily. 3. Fibrolysin injections, 30 minims (2 c.c.) daily for a fortnight, where joint deformity present. *Dardel.* 236

Asthma, Bronchial. TREATMENT. 1. When patient first seen during an attack, give 10 grains (0.6 Gm.) of blue mass or an equivalent amount of calomel with soda, followed by salts next morning. 2. Morphine and atropine injection, only if patient suffering intensely. 3. Sodium iodate, gr. iv-v (0.25-0.3 Gm.) every four to six hours, in capsules, given with food (contraindicated in the tuberculous, especially if hemoptysis). 4. Repeat mercurial purge if attack not markedly better in twenty-four hours. 5. Diet. During attacks: Broths every two to four hours. In intervals between attacks: Enough plain, coarse food to satisfy hunger and no more. Soups, clear of fat; fresh fish; raw oysters or clams; tender and lean meats; all vegetables except onions, cabbage, cucumbers, corn on cob; potatoes, peas, and beans only sparingly; only well-baked or toasted bread; rice, cereals, and eggs in moderation; no raw fruits; pastry, sweets, and any articles found by experience to dis-

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agree to be avoided. Careful scrutiny of patient's selection of foods required. Heaviest meal to be taken at noon; light supper. *Oettinger.* Page 37

Theobromine sodium salicylate (diuretin) found to do good in many cases. Often it is sufficient to give 15 to 30 grains (1 to 2 Gm.) before time of expected paroxysm. The product can be taken for weeks without harm. *Meyer and Cahn.* 179

Bronchopneumonia. TREATMENT. Creosote carbonate recommended for use in bronchopneumonia and obstinate chronic bronchitis in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first three years; in fifth and sixth years, 20 drops (2 Gm.). *Hunäns.* 162

Carcinoma. TREATMENT. Silicic acid internally, 1/6 to 1/3 grain (0.01 to 0.02 Gm.) daily, advised to prevent recurrence after cancer operations. In cancer of digestive organs, however, not more than a few milligrams should be given daily. *Benedikt.* 242

Carcinoma, Esophageal. TREATMENT. Hydrogen dioxide, 1 dessertspoonful of 1 to 3 per cent. solution every hour, found to be valuable palliative measure where stenosis apparently complete. Within twenty-four hours stenosis is overcome, and later purées and even solid food can be swallowed. Subjective symptoms disappear and patients gain in weight. Measure of little use, however, in scirrhous form of cancer. *Fradiss.* 109

Carcinoma, Uterine. TREATMENT. Method described value of which depends on (1) destruction of gross mass of carcinoma in uterus by the actual cautery heated to a little less than dull cherry-red heat; (2) application of heat to pathological tissues until whole pelvis has its temperature raised to 120° F. Uterus is thrown off as charred lump and remaining shell becomes a cicatricial mass free of carcinoma. Cachexia disappears and cure is more probable than with any other method. *Percy.* 234

Cardiovascular Disease. TREATMENT. Ideal diet in presence of impaired circulation consists essentially of bread and butter, with some milk to supply fluid, and enough cheese to make up protein requirements; fruits and vegetables to be added in moderate amount. *Bishop.* 108

Chorea. TREATMENT. Twenty-five cases, in children of 8 to 19 years, in which abnormal movements rapidly disappeared after 3 or 4 intravenous injections of 0.2 to 0.35 Gm. of salvarsan, given weekly. Recovery regularly after three or four weeks. General condition also always greatly ameliorated. *Marie and Chatelin.* 38

Constipation. TREATMENT. Stubborn constipation in infants is relieved by giving 1 dram (4 c.c.) of olive oil once or twice daily. Constipation in neurasthenics is also benefited. *Bram.* 47

Diabetes Mellitus. TREATMENT. For first two weeks restrict to careful antidiabetic diet, unless sugar in urine practically disappears in less time. Then cautiously increase carbohydrates, always warning patient of danger of overeating *permissible* articles. Should sugar persist, put to bed and restrict to 1 raw egg and 2 ounces of olive oil 3 or 4 times a day. Continue free use of a mildly alkaline drinking water. If any acidosis symptoms result, decrease amount of oil and give small quantities of carbohydrates. Proper mastication an important detail in treatment. For constipation, use: Olive oil, castor oil, glycerin, of each, 160 parts; gum arabic, 18; flavoring (oil of cassia or gaultheria), 0.5. Best diabetic flour is: Unadulterated soy-bean flour, 350 parts; unground poppy seed, 30; eggs, 250; pure baking powder, 15; water, 340. *Hodgson.* 39

Cultures of lactic acid bacillus given to 13 cases in doses of 4 to 16 c.c. (1 to 4 drams) three times daily. Indican and sugar in urine both markedly reduced. Results probably due not only to removal of putrefaction, but also to partial inhibition of carbohydrate digestion by the bacilli, as indicated by experiments *in vitro*. *Horowitz.* 235

Dupuytren's Contraction. TREATMENT. Thyroid substance continuously administered in doses of 0.1 Gm. (1½ grains) found markedly beneficial in 5 cases. *Gilbert.* 173

Dysentery. TREATMENT. Measures useful in form of dysentery sometimes epidemic in institutions discussed. 1. Isolate patient and put to bed. 2. Give calomel, 1 grain (0.06 Gm.), followed in two hours by mixture of dilute sulphuric acid, ℥ij (12 c.c.); compound tincture of cardamom, ℥j (30 c.c.), in water, enough to make ℥viij (250 c.c.); ℥j every two hours during the disease. 3. Olive oil, 1 tablespoonful every two hours; no other food. 4. Boiled water at frequent intervals. 5. In the aged, debilitated or arteriosclerotic, 1 teaspoonful of brandy every three hours. *Jones.* 163

Edema of Extremities. TREATMENT. Where edema of legs resisted all measures, especially where incision not permitted, good results obtained from local use of hypertonic saline solutions—25 to 50 Gm. (¾ to 1½ ounces) of sodium chloride to 1 liter (quart) of distilled water. Soak gauze compresses lightly in this, wrap around legs, and cover with thick layer of absorbent cotton, held in place by bandages. Leave dressing on overnight. Equally good results in edemas due to broken compensation, Bright's disease, etc. *Pathault.* 40

Epistaxis. TREATMENT. With patient sitting in chair, stand behind him, place index fingers of both hands beneath body of lower jaw on each side, with thumbs resting behind angles, and make gentle traction upward upon head, and simultaneously extend it backward as far as patient can comfortably bear. Sets up artificial anemia in nose and head in

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general, causing epistaxis to cease. Desist in one or two minutes, or consciousness may be partly or wholly lost. *Ritschl.* Page 165

Eye Injuries. TREATMENT. Following formula used for disinfection of cornea, especially after extraction of foreign bodies: To 2¼ grains (0.15 Gm.) of stovaine, finely pulverized and dissolved in 5 drops of oil, add, after mixing, preferably on a water bath: Hydrated wool-fat, gr. lxxv (5 Gm.), and petrolatum, 3iiss (10 Gm.). Then add gradually: Iodine, gr. ii¼ (0.15 Gm.); sodium iodide, gr. ivss (0.3 Gm.); water, ♏xxiv (1½ Gm.). *Dewaele.* 237

In simple abrasions of cornea: 1. Irrigate conjunctival sac thoroughly with normal saline or boric acid solution. 2. Drop argyrol in eye. 3. Fill conjunctival sac with a sterile medium consisting of petrolatum, ℥vj (180 Gm.); mercury bichloride, gr. j (0.06 Gm.), and sodium chloride, gr. v (0.3 Gm.). Where cornea already infected and ulcer present, sterilize area with phenol, removing excess with alcohol; or else, touch lightly with platinum probe at red heat. In wounds of cornea: 1. Cleanse eye thoroughly. 2. Cut off any projecting iris. 3. Drop in atropine and argyrol. 4. Fill with sterile petrolatum. In burns of eye: 1. Fill with sterile petrolatum. 2. Move eyeball and lids frequently to prevent adhesions. Where sclera wounded: Draw conjunctiva over wound and stitch together. *White.* 240

Fibroid Phthisis. TREATMENT. Where profuse expectoration of pus, creosote often best remedy. Dose, 3 to 5 drops (0.18 to 0.3 c.c.) three times daily, given over a long period. Creosote carbonate more easily tolerated; dose, 15 to 25 drops (0.9 to 1.5 c.c.) per day. *Fishberg.* 180

Filariasis. TREATMENT. Case of pronounced elephantiasis of lower extremities in which two intravenous injections of 0.6 Gm. of salvarsan caused disappearance of filariæ from blood and great reduction in size of limbs, weight falling from 400 to 244 lbs. *Barnes.* 1

Fracture of Forearm. TREATMENT. To correct overriding of fragments, attach to hand, anteriorly and posteriorly, as separate straps, zinc oxide adhesive plasters 2½ inches in width, reading from above wrist to 6 inches beyond extended fingers, and fixed above wrist and about knuckles with encircling strips. Apply usual splint dressing and also a plaster-of-Paris encasing bandage, including hand and lower arm. When this firm, include beneath enveloped forearm, by more turns of plaster bandage, a light, flat wooden splint projecting 1 or 2 inches beyond extended fingers. To a cross-piece at end of this, projecting an inch, attach the double adhesive strap from hand with tacks, thus keeping bony fragments from overriding. *Miel.* 165

Fracture of Hip, Intracapsular. TREATMENT. Longitudinal traction alone often unsatisfactory in results. Longitudinal combined with lateral traction, however, or wide abduction in plaster of Paris, usually gives serviceable limb. Former far easier to apply and the more suitable the older the patient. Plaster-cast method requires much skill in application, and is better adapted to young patients. *Davis.* 41

Gastric Ulcer. TREATMENT. Best preparation of bismuth to use is the subnitrate precipitated from a boiling-hot mixture. Cleanse stomach in morning with 150 c.c. (5 ounces) of Carlsbad or Vichy water, and three-quarter to one hour later give 10 to 20 Gm. (2½ to 5 drams) of bismuth subnitrate suspended in tumblerful of warm water. Administer daily, and increase or reduce dose, or discontinue, more or less rapidly, according to clinical course (Fleiner). Another method is to give same doses of bismuth finely suspended in oil, several times daily. Stepp recommends following bismuth suspension: Bismuthi subnitratis, gr. xlv (3 Gm.); chloroformi, ♏xv (1 c.c.); aquæ destillatæ, 5 fluidounces (150 c.c.); 1 to 2 tablespoonfuls to be taken hourly for several weeks. *Aaron.* 42

1. Absolute rest in bed. 2. No food for five to seven days. 3. Morphine hypodermically, until hemorrhage has ceased. 4. Ice-pack on abdomen, or hot applications in absense of hemorrhage. 5. Move bowels by enema, if necessary; where no hemorrhage, give citrate of magnesia or Carlsbad salts. 6. Bismuth subnitrate in 30-grain (2 Gm.) doses, with magnesium hydrogen dioxide (25 per cent.) in 7½-grain (0.5 Gm.) doses three times daily. Give boiled water if necessary to insure retention of these drugs. 7. Rectal alimentation, giving 500 c.c. (1 pint) of 10 per cent. dextrose solution at body temperature every six hours, by Murphy drop method. 8. Return to mouth feeding as soon as possible, according patient's condition, beginning with small doses of albumin water several times daily. *Gompertz.* 139

Headache. TREATMENT. Migraine and other forms of severe headache relieved by causing copious flow of nasal secretions, thus removing congestion of dura and pia. Formulæ used: I. Mentholis, gr. viiss (0.5 Gm.); acidi borici, gr. xv (1 Gm.); iridis florentinæ, saccari lactis, of each, 3ss (2 Gm.). II. Pulveris mayoranæ, iridis florentinæ, of each, gr. xv (1 Gm.); sacchari lactis, 3ss (2 Gm.); veratri (albi), gr. ii¼ (0.14 Gm.). *Lorand.* 237

Hemoptysis. TREATMENT. Subcutaneous injection of 40 c.c. of sterile gelatin solution recommended. Causes in twenty-four hours rise in viscosity of blood by 1.4 of original value. *Cmunt.* 110

To prevent onset of hemoptysis where sense of tightness in chest or sputum blood-streaked: 1. Absolute rest. 2. Nitroglycerin solution, ♏xv (1 c.c.), or sodium nitrite, gr. xv (1 Gm.), in ℥ij (60 c.c.) of water;

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3j (4 c.c.) every four hours for two or three days.—Where actual hemorrhage: 1. Put to bed in comfortable position. 2. Reassure patient. 3. Amyl nitrite inhalation. 4. Atropine, gr. 1/50 (0.0012 Gm.) hypodermically, to be repeated 2 or 3 times in next twenty-four hours. 5. Or, nitroglycerin, gr. 1/100 (0.0006 Gm.) hypodermically, at first every half-hour for 3 or 4 doses, later less often; followed by sodium nitrite, gr. j (0.06 Gm.) every three or four hours. 6. Where excessive nervous irritability, or cough troublesome: Morphine. 7. In abundant hemorrhages: Apply bandages to middle of arms and thighs. 8. Epinephrin hydrochloride, 5 drops of 1: 1000 solution, or suprarenal substance, 3 grains (0.18 Gm.), every three or four hours; or pituitary extract, injected subcutaneously. *Frazer.* Page 111

Hemorrhoids. TREATMENT. Olive oil a good demulcent laxative in hemorrhoids and anal fissure. *Bram.* 47

Where not much inflammation or hemorrhage, following ointment advisable: Cerati, olei amygdalæ expressi, zinci oxidi, of each ʒiiss (10 Gm.); balsami Peruviani, gtt. iij. Piece of this of size of hazelnut to be introduced high up through anus morning and evening, and especially before stool. Where much hemorrhage, following may be used: Chrysarobini, gr. xij (0.8 Gm.); iodoformi, gr. v (0.3 Gm.); extracti belladonnæ fol., gr. x (0.6 Gm.); petrolati, ʒj (30 Gm.). Hot water or antipyrin in powder or 2 per cent. solution equally effective and less irritating. Where intense itching: Aluminis, gr. xv (1 Gm.); camphoræ, gr. xij (0.75 Gm.); adipis benzoinati, ʒj (30 Gm.). Where much moisture and also itching, 10 per cent. bismuth subsalicylate powder useful. If much congestion, use: Bismuthi subsalicylatis, zinci oxidi, of each gr. lxxv (5 Gm.); talci, ʒiij (90 Gm.). In voluminous, readily prolapsing or bleeding hemorrhoids, an injection of olive oil should be taken every evening before retiring. *Plicque.* 166

Hernia. TREATMENT. Use of a mixture of 3 parts of hyoscine and 2 of atropine advised to facilitate reduction of incarcerated hernia. Inject 1/1000 grain (0.00006 Gm.) every five to twenty minutes until desired effect obtained. Full dose for adult males is 1/100 grain (0.0006 Gm.). *Waugh.* 167

Hyperchlorhydria. TREATMENT. Where patient constipated at beginning of treatment, give suspension of magnesia and bismuth just after and again one and a half hours after meals; each dose to represent 6 grains (0.4 Gm.) of magnesium hydroxide and 22 grains (1.5 Gm.) of bismuth subnitrate. Continue for three to five days, and, if evacuations still too frequent, use instead a powder containing equal *volumes* of magnesium oxide and magnesium carbonate, with a little powdered charcoal and sometimes bismuth. Less magnesium oxide should always be prescribed than is capable of neutralizing completely all the acid present. *Tupper.* 167

Ileocolitis, Infantile. TREATMENT. In "putrefactive diarrhea" of infants, all irritating found should be avoided as, by causing increased mucous flow, it favors bacterial pullulation. Use of proteid of cows' milk, obtained by removing whey from skimmed milk with chymogen or pepsin, advisable. Break up curd into fine particles and suspend in 5 per cent. gelatin water, to be heated before administration. After four or five days to a week replace gelatin water partly by buttermilk, and skimmed-milk curds by whole-milk curds, gradually getting child on albuminmilk and finally on whole-milk mixture. *Grulee.* 168

Impetigo Contagiosa. TREATMENT. Remove all crusts, wash raw surfaces with bichloride solution, make a fresh paste by adding a few drops of mercury bichloride and ammonium chloride solution (1: 2000) to small quantity of zinc oxide, and apply to irritated places twice daily. *Hiden.* 182

Influenza. TREATMENT. Care to secure proper ventilation, alimentation, and elimination necessary. Local treatment of air passages important, to destroy causative bacillus. In the morning: 1. Cleanse nose and throat with spray of Dobell's solution or 1: 400 phenol solution at 85° to 90° F. 2. Swab with: Balsam of Peru, gr. x (0.6 Gm.); ichthyol, gr. v (0.3 Gm.); glycerin, q. s. ad fʒij (60 c.c.). In the evening: 1. Repeat spray. 2. Have patient inhale for one-half hour creosote, 8 c.c. to quart of water. 3. Swab nose and throat with epinephrin solution. 4. Fifteen minutes later swab with argyrol, 10 per cent. Hydrotherapy of value in chronic cases. In severe chronic cases, sojourn in an even and sunshiny, but not tropical or subtropical, climate desirable. *Jones.* 111

Iritis. TREATMENT. Sinus infection considered responsible for many cases of intraocular inflammation. Following treatment used with good results in 26 cases of iritis and 5 of idiopathic retinochoroiditis: Saturate tampon, of such size as to fit snugly between middle turbinate and septum and extend from exterior portion of nose to sinus posteriorly, with aqueous argyrol solution (gr. xl-ʒj) and introduce. This will drain ethmoid and other sinuses. To drain antrum, place tampons under scroll of middle turbinate and above upper part of inferior turbinate. Allow to remain twenty minutes to one hour. *Manning.* 112

Lead Poisoning. TREATMENT. Obstinate lead colic relieved and constipation overcome by giving a tumblerful of olive oil once daily. *Bram.* 47

Leprosy. TREATMENT. Salvarsan used in 5 cases. Caused clinical improvement, cases showing partial or complete resolution of nodules of tissue examined. Effect is not specific or permanent. *Wellman.* 114

Leukemia. TREATMENT. Benzol (benzene) used in 6 cases of myeloid leukemia

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and 1 of Hodgkin's disease with good results. Given in capsules each containing 0.5 Gm. (8 minims), with same amount of olive oil; at first, 4 capsules daily, after meals, then 2 capsules 3 times daily, later 4 times, and finally 5 times. Leucocyte count gradually lowered to normal, fever disappears, and general condition improved. Effectual where other measures, including X-rays, have failed. *Kiralyfi.* Page 114

Marasmus. TREATMENT. Large series of infants with marasmus, congenital or acquired, and premature infants, treated with marked success by external application of codliver oil. Wrap child in oil-soaked flannel from armpits to iliac crests, and cover with oiled silk. Remove flannel, wash skin with soap and water, and reapply flannel, at twelve-hour intervals. Give only water by mouth, in ample quantity. Treatment causes rise in temperature, loss of dryness and wrinkles of skin, and an increase in weight, often considerable. Feed by mouth only when temperature has been normal for a number of days and skin shows increase in fat and water content. *Gray.* 114

Measles. TREATMENT. Following measures employed in 160 cases: (1) hot bath, followed by (2) application of eucalyptus oil to whole body except hands and part of face about mouth, nose, and eyes; (3) mouth irrigated twice daily with weak alum lotion, and glycerin and borax applied to interior of mouth and gums; (4) tonsils and fauces treated with 1: 10 phenol morning and evening, using firm cotton mop on end of forceps; (5) blanket-bath given morning and evening for four successive days, followed by general oil rubbing. Treatment reduced mortality and had favorable influence on course of disease. Careful nursing and maintenance of an even air temperature of 65° F. important accessory measures. *Connolly.* 239

Nephritis, Acute. TREATMENT. Saline proctoclysis advised in acute nephritis in children. Tends to relieve edema and subjective symptoms and improve condition of urine. Normal salt solution, kept at about 110° F. by hot-water bottles surrounding graduated container, passed into rectum through soft-rubber catheter, which is inserted about 6 to 8 inches after a cleansing enema. Procedure also useful in acute infectious diseases and toxemic diseases, as well as before and after ether anesthesia. *Lowenburg.* 171

Following treatment advised: 1. Rest in bed until two weeks after red cells and kidney epithelium disappear from urine. 2. Diet: Limit or exclude proteids; give carbohydrates in large amount, especially sugar, fruit juices and fruits rich in sugar, and gruels of finely ground rice, corn, wheat, or potato starch; also give thoroughly washed butter; withhold salt. Milk to be given only after dangerous stage past. Menu then enlarged gradually, adding at first purées, boiled green vegetables, cocoa, yolk of eggs, etc., and only later white of eggs, river fish, and boiled meat. 3. Fluids: Fruit juices, weak tea (Chinese tea, grass seeds, dried strawberries, or raspberries, blackberry leaves, etc.) or simple pure water. 4. Elementary measures: Theobromine preparations; diaphoresis only where edema. Hot, dry climate acts same as sweat baths. Where other methods fail, puncture of skin. In threatening uremia, venesection and, if latter ineffective, decapsulation. *Von Noorden.* 231

Nevi. TREATMENT. Use of radium advised. Skin should first be broken over lesion, even if only by lightest electrolysis, to permit of rapid action and therefore small dosage of radium salt. Eradication without scarring. *De Courmelles.* 172

Otitis Media. TREATMENT. Where discharge copious, syringe ear gently but thoroughly 2 or 3 times daily with saturated boric acid solution, or, better, mercury bichloride solution, 1: 8000, sometimes later 1: 4000. Where discharge scanty, first cleanse ear with cotton mop, or if acute stage of attack passed drive out discharge by Valsalva method or Politzer bag and wipe out again. Then have patient incline head and pour in bichloride solution, allow to remain ten minutes, dry ear, not very thoroughly, and plug meatus with absorbent cotton. Do this not oftener than once daily. Exceptionally, especially where there is extensive destruction of drumhead, insufflation of boric acid, or of boric acid and aristol or zinc oxide, equal parts, proves more efficacious than the mercury solution. *Theobald.* 116

Paralysis, General. TREATMENT. Hexamethylenamine, gr. x (0.6 Gm.) thrice daily, found effectual in preventing retention of urine and avoiding necessity for catheterization. *Baird.* 242

Pediculosis Capitis. TREATMENT. Lay patient on back on bed with head over edge, hair lying in a basin beneath head on a chair. Pour 1: 40 phenol solution over hair into basin and sluice backward and forward until hair thoroughly soaked, especially over ears and at nape of neck. Continue sluicing ten minutes, then lift hair from basin and allow to drain, without drying it. Then swathe head with thick towel or large piece of flannel and allow to remain for an hour. Finally wash hair or simply allow to dry. Method entirely safe with children of 5 years and over. Hair not damaged. *Whitfield.* 173

Pellagra. TREATMENT. Gelsemium followed by much improvement in 5 cases. Fluid-extract, 3 or 4 drops every four hours, given. Discontinue drug if ptosis or diplopia occurs. *Blosser.* 174

Pneumonia, Lobar. TREATMENT. Sodium citrate internally found in most cases, especially in children, to cause fall in temperature, pulse, and respiration to normal within twenty-four hours; process in lung clears up soon after, third stage being apparently escaped. Administered in doses of

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30 to 40 grains (2 to 2.6 Gm.) in adults every two hours, with a little citric acid or in lemonade. Dose for children to be calculated from 40-grain dose in adults. Drug to be continued till clearing up of process in lung complete. Active catharsis to be established at beginning of treatment. Sodium chloride should be supplied to system in about the normal daily amount (240 grains, or 16 Gm.), with the diet or otherwise. *Weaver.* Page 116

Administration of calcium chloride in 10-grain (0.6 Gm.) doses every four hours advised, from outset until three days after defervescence. Patients given it seem to do better than others. *Cornwall.* 175

Creosote carbonate observed to lower temperature considerably and diminish somnolence or delirium in pneumonic processes in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first 3 years; in fifth and sixth years, 20 drops (2 Gm.) and in seventh to tenth years, 25 to 30 drops (2.5 to 3 Gm.). Administered readily in a spoonful of warm milk. To be continued in ½ doses for a week after auscultatory signs have disappeared. *Hunäns.* 162

Poisoning by Illuminating Gas. TREATMENT. I. First stage, preceding loss of consciousness: 1. Fresh air. 2. Aromatic spirit of ammonia. 3. Effervescent sodium phosphate, to produce eructations and relieve nausea. 4. Oxygen inhalation. 5. Analgesics for headache. 6. Avoidance of violent exertion.—II. Second stage, patient unconscious, but breathing: 1. Howard artificial respiration, rhythmic compression of lower thorax, to assist breathing. 2. Oxygen, preferably under pressure. 3. Camphor, caffeine, digitalis, and strychnine hypodermically. 4. External heat, if indicated. 5. Massage of muscles after aërating lungs. 6. Treatment to be conducted in warm room. 7. If not prompt recovery, venesection and normal saline infusion, or use of "pulmotor."—III. Third stage, patient unconscious and not breathing: 1. Same measures as in preceding stage. 2. Blood transfusion. 3. Artificial respiration by Schäfer method, patient prone. *McCombs.* 44

Prurigo. TREATMENT. 1. Good hygiene. 2. Generous diet. 3. Codliver oil. 4. To control itching: Baths with starch, sulphurated potash, or creolin; tar, pure or mixed with olive or codliver oil; codliver oil ointment, with betanaphthol or phenol added. 5. To dissipate any coexisting eruption: Sulphur, in soap, solution of potassium sulphide, or thermal waters; codliver oil, covered with bandage and impermeable varnish; codliver oil, 3 parts, and white wax, 1, used as pomade, with or without covering; alternate injections of phenol and pilocarpine; X-rays; thyroidin. 6. In rebellious and severe cases: Soap patient in warm bath and apply a tar preparation or Vleminckx's solution. 7. In stage of lichenification: Radium. *Morris.* 50

Psoriasis. TREATMENT. Potassium permanganate, 2 tablespoonfuls of a saturated solution added to a warm bath, recommended for acute universal psoriasis. After soaking in this for ten or fifteen minutes, patient to dry himself thoroughly and apply following lotion: Amyli, talci, of each, 40 parts; glycerini, 20 parts; acaciæ, 1 part; liq. plumbi subacetatis, 4 parts; liq. picis carbonis, 26.5 parts; aquæ, 200 parts. Tar baths, preparing by adding 1 or 2 glasses (℥viij or xvj) of an emulsion of coaltar, also excellent, though a tar salve, rubbed in after a bath, is often better. Following paste found efficient in some obstinate old patches: Acidi salicylici, 10 parts; chrysarobini, olei rusci, of each, 20 parts; saponis viridis, adipis lanæ hydrosi, of each, 25 parts. Cover with oiled silk. A lotion of 1 part of lead subacetate solution to 5 of liquor picis carbonis, diluted ℥j-Oj, may be used to envelop the part, covered with oil-silk, and allowed to remain all night. *Montgomery.* 175

Pyelonephritis in Pregnancy. TREATMENT. 1. Rest in bed. 2. Elevation of affected kidney. 3. Morphine or codeine for pain. 4. Early catharsis by calomel and salines. 5. Ice-cap to loin. 6. Cream of tartar water internally. 7. Diet: Milk, skimmed if much digestive disturbance, or lactone buttermilk. 8. Hexamethylenamine, gr. v-x (0.3-0.6 Gm.) with lithium or potassium citrate, gr. x, at three- or four- hour intervals. 9. Replace last after forty-eight hours by sodium benzoate, gr. x every two hours, until patient complains of burning in kidney region, when first combination should be resumed. 10. Potassium iodide or phenyl salicylate might also be used. 11. Argyrol (25 per cent.), ℥j (4 c.c.), instilled into pelvis in cases persisting more than ten days. 12. In colon bacillus infections, autogenous vaccines, 30 to 50 million once a week, have been successful. 13. Induction of labor, in persistent cases late in pregnancy. 14. Nephrotomy and drainage where definite signs of surgical kidney present. *O'Connor.* 240

Scalp Wounds. TREATMENT. Shave scalp for some distance around wound, either dry or wet with alcohol; after area dried, paint with tincture of iodine and wash off surplus with alcohol. In suturing use figure 8 sutures, not too tight. Where parts badly torn, provide free drainage; stitches not to be too close together. In all fractures of skull give 40 to 60 grains (2.6 to 4 Gm.) of hexamethylenamine daily. *Harper.* 119

Sinus Suppuration, Acute. TREATMENT. Apply 4 per cent. cocaine solution on cotton applicator, passed between end of middle turbinate and nasal wall. Follow by a cleansing alkaline solution and an oily spray containing menthol. To reduce pain and promote drainage: Hot, moist applications over whole face. Salicylic preparations, acetphenetidin, and quinine, to be used as indicated. Free catharsis. Irrigation of frontal or maxillary sinuses unnecessary unless there is trouble in

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antrum traceable to carious tooth. Vacuum treatment by negative air-pressure often useful. *Lemere.* Page 176

Syphilis. TREATMENT. Following plan advised: Intravenous salvarsan injection, immediately followed by series (12 to 15) of intramuscular mercury salicylate injections, and later by 4 to 6 intramuscular injections of small doses (0.1 to 0.2 Gm.) of salvarsan in sesame oil. After this start new series of mercury salicylate injections, to be continued at increasing intervals during first year of disease. A number of the cases thus treated appeared to be cured. *Eisenstaedt.* 53

Immediate tolerance to neosalvarsan is greater than to salvarsan, but this does not warrant use of relatively larger doses of former. Neosalvarsan to be preferred to salvarsan where latter badly borne and in cases of tabes, paresis, arteriosclerosis, cardiac disease, *i.e.*, in all patients in whom too marked a reaction is to be avoided and where only small doses are indicated. *Bayet.* 115

Tabes Dorsalis. DIAGNOSIS. Spontaneous fractures not infrequently an initial or early symptom of tabes. *Taylor.* 54

Talipes Equinovarus. TREATMENT. Immediately after birth place strip of zinc oxide adhesive plaster over sole and inner aspect of foot, over correct position of latter, and draw plaster tightly along outer aspect of leg. Place second strip over sole just posterior to base of metatarsals, extending over inner aspect of foot and ending over joint of great toe. Draw firmly, apply to outer side of leg 1 to 2½ inches above external malleolus, and wrap around leg in ascending spiral. Place further strips to cover and tighten the second tension strip, beginning on leg 2 inches above ankle and overlapping until instep reached. Renew dressing, after cleansing foot with ether and alcohol, ten days or two weeks later. Deformity will be corrected in 6 or 8 weeks. Leave foot with stiff-ankle infant-shoe, with 1 strip of adhesive on outer side of foot and leg. *Allen.* 178

Toxemia of Pregnancy. TREATMENT. Free administration of oxygen seemed useful in a number of cases, some severe. May be given either by inhalation or subcutaneously. *Shears.* 242

Tuberculosis, Articular. TREATMENT. Thyroid substance indicated in sluggish cases, especially if evidences of thyroid inactivity present. Dose should be only 1/6 to ½ grain (0.01 to 0.03 Gm.) *pro die*, and patient watched for tachycardia. *Lereboullet.* 179

Tuberculosis, Laryngeal. TREATMENT. Submucous cauterization found to heal 70 to 85 per cent. of cases. Performed with electric cautery. Easier than curettage, and there is no bleeding. Not suited, however, for superficial ulcers on posterior wall, particularly those on the cords, which do better on the old method of lactic acid applications. *Pettit.* 237

Tuberculosis, Pulmonary. DIAGNOSIS. Value of percussion in earliest stage emphasized. With patient lying on back on couch, employ light percussion on terminal phalanx of a finger firmly pressed on spot under examination. Three characteristic dull areas on either side should be sought, which may all be present and of considerable size while apex is still very fairly resonant: 1. Opposite inner part of first intercostal space (percussing anteriorly) and inner part of suprascapular fossa (posteriorly). 2. Opposite outer part of same interspace, and outer part of suprascapular fossa. 3. In upper part of lower lobe, percussing posteriorly at end of spine of scapula, and anteriorly in second interspace. *Lees.* 54

Quantitative examination of albumin in sputum easily made and useful in diagnosis in doubtful cases. Technique as follows: To 20 c.c. of sputum as free from saliva as possible add a 3 per cent. acetic acid solution slowly, while agitating, until mucin is coagulated; add 2 parts of distilled water to sputum, shake well, filter through several layers of gauze, add a few drops of acetic acid solution, filter, and test filtrate for albumin by any ordinary test. If more than a trace present make quantitative test with Esbach's tube and multiply reading by 3 to get percentage. All active cases give positive reaction. *Works.* 117

TREATMENT. 1. Inhalation of following solution: Creosoti, phenolis, spiritus chloroformi, ana 3ij (8 c.c.); tincturæ iodi, spiritus ætheris, ana 3j (4 c.c.). Two Yeo inhalers to be used on alternate days, cleansed by immersion in boiling water and careful drying. Patient to pour 6 to 8 drops of solution on felt of inhaler *every hour* during daytime, and once or twice during night if awake. Petrolatum or lanolin cold cream to be smeared over nostrils and upper lip before use of inhaler at first. 2. Period of rest in bed at beginning of treatment. 3. Treat digestive disturbances. 4. Give a sufficiency of easily digested food; malted milk, dissolved in scalded whole milk, after each meal. 5. Careful disinfection of mouth 4 times daily, after the milk; antiseptic sprays for unhealthy conditions of fauces. Forty-eight complete recoveries in 70 cases thus treated. *Lees.* 54

Hydrotherapeutic measures, to be employed in 4 successive stages or steps, described: I. Ablution, beginning with water at 90° F., gradually reduced, by 2° daily until 60° F. reached; followed by drying and, if possible, exercise in open air. II. Affusion. With patient standing in water at 105° F., water at 85°, gradually reduced to 60°, is thrown over back and chest. III. Cold rub. With patient standing in water at 105°, a sheet is wrung out in water at 80°, gradually reduced to 50°, and actively rubbed till sheet warm. IV. Drip sheet. Same as last, with sheet dripping; patient rubbed and slapped for two minutes; water at 70° then poured over shoulders, and friction applied till sheet

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warm; same procedure rapidly repeated over other parts of body. *Baruch.* Page 56

Olive oil, ½ ounce (15 c.c.) two hours after each meal, increased weekly by ½ ounce up to 3 ounces, found to cause considerable gain in weight. *Bram.* 47

Sodium cinnamate subcutaneous injections found superior to cacodylates in all varieties of cases in which a general tonic effect required. Initial dose, contents of 5 c.c. (1¼ drain) ampoule, including 0.5 Gm. (⅝ grain) of the cinnamate; this to be rapidly increased by one-half, bulk of solution, however, being kept the same. Injections given daily. *Laborde.* 118

Counterirritation with mustard sometimes found very effective in night-cough. Soft capsules containing beechwood creosote, 1 minim (0.06 c.c.), oil of sandalwood, 5 minim (0.06 c.c.); oil of sandalwood, 5 grains (0.12 Gm.), given 4 or 5 times daily, may be of decided benefit for cough. *Gordon.* 119

Importance of hyperalimentation in cases of tuberculosis in pregnancy where it is decided not to empty uterus emphasized. Use of following mixture advised to increase appetite: Lysol, 1 part; ichthyol, 10 parts, and glycerin 20 parts. Begin with 1 drop and increase by 1 drop at each dose up to 30 drops, which is maintained. Preparation dropped into half tumblerful of water and taken just before meals. *Stewart.* 175

Four to 8 capsules, each containing 4 grains (0.25 Gm.) of liver substance, *pro die* found effective in arresting or preventing return of hemoptysis. In cases with low arterial tension and asthenia, epinephrin, 5 to 10 drops of 1: 1000 solution daily for five to ten days, followed by like period of rest, or of adrenal substance, 1½ to 5 grains (0.1 to 0.3 Gm.) daily, is indicated. Bayle secures good results by administering 100 Gm. (3½ ounces) of fresh hog spleen every day. Loeper and Esmonet advise pancreatin, 2 to 4 Gm. (3ss-j) in keratin-coated capsules of 0.25 Gm. (4 grains) each, daily in first and second stage cases, and especially in patients with involvement of serous membranes; improves appetite and general condition. *Lereboullet.* 179

Sluggish, afebrile cases of tuberculosis, especially with profuse expectoration, are often greatly bnefited by creosote. *Fishberg.* 180

Typhoid Fever. TREATMENT. Olive oil useful as a food in 1- to 3- ounce (30 to 90 c.c.) doses 3 times daily. Also useful as a laxative; high injections of lukewarm oil may be given. *Bram.* 47

Collective statistics as to results of use of typhoid vaccines show 423 cases, with only 5.4 per cent. deaths. Dosage used by author: Initial hypodermic injection of 500,000,000, repeated at four-day intervals as long as required, and increased by 100,000,000 each time. Stock-vaccine injections made just under skin over insertion of deltoid or over tensor vaginæ femoris. *Callison.* 57

Series of 65 cases treated without milk, on diet consisting of broths, soups, gruels, gelatin, eggs, sugar of milk and butter. Gelatin given almost ad libitum—6 ounces of 5 per cent. solution, flavored with lemon, vanilla, etc., five times daily. Mortality low, persistent diarrhea only in 4 cases, hemorrhage in 4 and perforation in none. *Johnson and Watt.* 181

Urticaria. TREATMENT. Epinephrin given subcutaneously in doses of 8 minims (0.5 c.c.) in 6 cases. Two doses always caused complete fading of rash and cessation of itching in ten to twenty minutes. Recurrence probable in an hour or two unless treatment continued. *Sicann.* 164

Vincent's Angina. TREATMENT. In mild cases, best results from use of trichloracetic acid. Membrane first removed by hydrogen peroxide and wiping with cotton swab; ulcer then anesthetized with 10 per cent. cocaine solution, and trichloracetic acid applied a few minutes after. Usually 3 or 4 applications at 2- or 3- day intervals necessary. Tincture of iodine preferable where ulceration extensive. For pain, orthoform. Carious teeth to be cared for. General condition also to be improved. *Halstead.* 58

Vomiting of Pregnancy, Pernicious. TREATMENT. Sodium bicarbonate, 5 to 50 grains (0.3 to 3 Gm.) a day, recommended. Part of it often vomited, but some retained. Continue for a week after vomiting stopped. Bowels to be well cleared by colonic flushing. Veronal also found useful. *Lyon.* 59

Whooping-cough. TREATMENT. Pertussis bacterin used in 40 cases. Disease not shortened, but bacterin causes, after preliminary slight aggravation, well-marked, and sometimes remarkable, symptomatic improvement in a certain proportion of cases. Best results produced at the height of the disease. Give 2 or 3 full doses—20 to 50 million bacteria each—at five-day intervals. In young infants moderate doses should be given early; they diminish severity of disease and minimize complications. *Zahorsky.* 48

Pertussis vaccine used in 17 cases. Best dose found to be 40 million bacteria, given in buttocks even to an infant twice a week, or in severe cases in old children, 3 times a week for one week only. If much benefit noted, intervals prolonged, and vice versa. Many cases improved after single dose. No reaction from injections, local or general. Vaccine should be used only in undoubted cases of the disease. The younger the infant, the more rapid the cure. *Scott.* 174

Wounds. TREATMENT. Treat all wounds on which great force has been exerted, and especially those contaminated by soil and dirt-covered objects, as if infected with gas bacilli. Leave open where possible and irrigate thoroughly with peroxide. Bandage lightly, if at all. Inspect frequently and irrigate often. On first sign or symptom of

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infection, take smear and examine for *B. aërogenes capsulatus*. Open wound freely, if sutured, and if on limb place latter in bath or irrigate continuously. If condition extensive, expose field widely to air by free incisions. (Do not employ peroxide in full strength or inject in confined spaces or directly under tissues.) *Cramp.* Page 42

Wounds of face and hands should be closed with subcuticular stitches, especially in women. To prevent subsequent stretching of scar, close superficial fascia with interrupted fine silk sutures before applying subcuticular stitches. After injuries to soft parts of hand, cleanse quickly by immersing in gasolene; after latter has evaporated, sterilize parts with tincture of iodine and alcohol. *Harper.* 119

Application, in gunshot wounds, of steaming towels wrung out in water as hot as can be borne, during thirty minutes night and morning before wound is dressed, recommended. To be continued till all inflammation subsides. *Griffith.* 110

Use of paste made by adding a few drops of mercury bichloride and ammonium chloride solution (1:2000) to small quantity of zinc oxide recommended for slight wounds, abrasions, injection punctures, indolent ulcers, sores about the face, etc. Where much stinging and itching about abrasions, substitute 2 per cent. phenol for bichloride. *Hiden.* 182

ANNOUNCEMENT.

AMERICAN MEDICAL EDITORS' ASSOCIATION.—The annual meeting of this Society will be held on June 16, at the Hotel Radisson, Minneapolis, Minn. An interesting program has been prepared covering items of journalistic as well as general information. The annual banquet will be held on the evening of the 16th.

AMERICAN PROCTOLOGIC SOCIETY.—The annual meeting of this Society will be held on June 16 and 17 at the Hotel Radisson, Minneapolis. The profession is cordially invited to attend.

Book Reviews

TRAITÉ INTERNATIONAL DE PSYCHOLOGIE PATHOLOGIQUE (International Treatise on Pathologic Psychology). Edited by Dr. A. Marie, of Villejuif. Volume II. Clinical Psychopathology. Octavo of xxiv + 1000 Pages, with 341 Illustrations. Volume III. Applied Psychopathology. Octavo of viii + 1086 Pages, with 338 Illustrations. Paris: Félix Alcan, 1911 and 1912. Paper binding, $5.00 (25 francs) per volume.

Volume II of this comprehensive work, the first volume of which was noticed in the MONTHLY CYCLOPEDIA some time ago, opens with a section on neuroses and psychoneuroses by the late Prof. Raymond, of Paris, and one on psychic disturbances occurring in the presence of organic nervous diseases, by Bechterew, of St. Petersburg. The succeeding chapters are on general paralysis, by A. Marie and Lhermitte; the dementias, by Ziehen; dementia precox, by Deny and Lhermitte; degenerations and psychopathic disorders, by Sollier, Roubinovitch, Colin, and Bourilhet; chronic systematized forms of delirium, by Magnan, Sérieux, and Capgras; manicdepressive and infectious psychoses, by Bagenoff and Pilcz; mental confusional states, by Régis and Hesnard; and the toxic psychoses of external origin, by Marie and Riche.

In Volume III Bianchi opens with a short section on the physiopathology of the sensory functions. This is followed by 300 pages on morbid mentality from the psychologic standpoint, by Sikorsky, of Kiev; morbid grief and joy, by Dumas; psychopathic sexuality, by Havelock Ellis; insanity in history, by Cullerre; ethnical psychopathology, by Marie; collective and morbid psychology, by Marie and Bagenoff; morbid psychology in the higher mammals, by Dexler; general etiology of psychopathic disorders, by Marie; experimental psychology in its relations to psychiatry, by Marie and Helme; and examination of the insane by electric methods, by Salomonson.

The immense amount of material collected in this work cannot fail to render it of marked value to all psychiatrists. Especially original and suggestive are the sections on comparative psychopathology and on the cosmic and social causes of mental disease, in the third volume. In the portion on etiology 100 pages are devoted to a subject which has probably not received such complete scientific consideration before, viz., the effects of such factors as variations of barometric pressure, heat influences, light, winds, dampness, electricity, lunar phases, etc., on the incidence of psychic disorders. The results of the work done so far in these directions are far from convincing, and one is led to agree with the final conclusion of the author, who states that while there is sufficient evidence that such influences are in some way operative, their complexity and difficulty of appreciation makes it impossible as yet to determine their actual *modus operandi*. In the section on the social factors of psychic disturbances, toxic, infectious, nervous and ancestral influences are discussed at length. An extensive list of references is supplied at the close of most of the chapters. The illustrations, including tracings, are numerous and well selected, though there is some repetition of cuts

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in different parts of the work. These two volumes fittingly conclude the series, which may be said to furnish a most complete and illuminating exposition of the subject of mental diseases.

THE OPERATING ROOM AND THE PATIENT. By Russell S. Fowler, M.D., Chief Surgeon First Division, German Hospital, Brooklyn, New York. Third Edition, Rewritten and Enlarged. Octavo of 611 Pages, with 212 Illustrations. Philadelphia and London: W. B. Saunders Company, 1913. Cloth, $3.50, net.

The first half of this useful book is devoted to such topics as the preparation of the operating room and of instruments and supplies, bandaging, anesthesia, preoperative preparation and the primary dressing, the after-treatment, care of the wound, hemorrhage, complications of wound infections, complications the result of antiseptics or of pressure, and circulatory complications. The second portion deals with operations on special regions or organs of the body, more particularly as regards the preparations for operation, the dressing of the wound, the after-treatment, including management of complications, drainage, skin grafting, splints, etc.

Since the second edition of the work appeared (1907) many new facts and procedures have come up deserving of consideration, especially in relation to vaccine therapy, anesthesia, etc. These have been duly referred to in the present edition. The Meltzer method of insufflation respiration, the relation of acapnia to surgical shock, Ryall's saline drop regulator for use in proctoclysis, and other matters lately developed are succinctly exposed. Somewhat surprising, however, is the omission of reference to stovaine and novocaine in spinal analgesia, the reader being left under the impression that cocaine is generally used in this procedure. At the end of the book there are lists of the instruments and dressings required in various operations. The illustrations are numerous and excellent. The text is concise, yet comprehensive. The surgeon and the practitioner doing minor surgery will find this book as in the past, a most useful guide concerning the accessory requirements and procedures in operative work.

GUIDE TO MIDWIFERY. By David Berry Hart, M.D., F. R. C. P. E., Lecturer on Midwifery, School of the Royal Colleges, Edinburgh; Formerly Obstetric Physician, Royal Maternity and Simpson Memorial Hospital, Edinburgh, etc. Octavo of xxiv + 765 Pages, with 4 Colored Plates and 268 Text Illustrations. New York: Rebman Company, 1912. Cloth, $6.00, net.

This new work on obstetrics was written, the author implies, with the intention of supplying not only a verbal description of the facts of the subject, but of affording, in so far as was possible an actual demonstration of the conditions or operations discussed. This could only be done, of course, by means of illustrations, and as a matter of fact, the diagrams and plates, though for the most part not original, do illustrate in a fairly complete manner the whole field covered. At the close of each chapter, moreover, there is a synopsis of the practical work, study of models, instruments, and clinical cases that should be required of every undergraduate, in order that he shall form a lasting mental picture of the conditions taken up. More valuable features of the book, however, would seem to the reviewer to be the concise nature and well-considered arrangement of the text, the great care taken to set forth clearly the causes and pathogenesis of various normal and abnormal processes, and the idea of collecting various non-essential theoretical discussions and historical notes in a special section covering about 100 pages at the end of the volume.

The main body of the text, in which are successively considered, in the course of some 600 pages, the necessary anatomical and physiological facts, the mechanism and management of normal labor, the "borderland cases" (occipito-posterior cases; breech presentations; face presentations; and multiple conceptions), the pathology of pregnancy, abnormal labor, hemorrhages of various types, and the essentials relating to the puerperium, is admirably calculated, both as to scope and arrangement, for the needs of the undergraduate student. The graduate, too, will be interested in some of the procedures advocated by the author. Thus in regard to the third stage of labor, Dr. Hart holds that separation of the placenta does not occur, as is generally believed, through contraction of the placenta site during a pain, "but after the pain is over, during the elastic recoil of the uterine wall, when the placental site slightly expands and tears itself away from the placental area at the level of the spongy layer, owing to the fact that the now non-vascular placenta does not expand with it as it did during the first and second stages of labor." Convinced of the correctness of this view, the author considers it inadvisable to compress the uterus for the purpose of *separating* the placenta and recommends that, while the uterus should be grasped with the hand, no pressure should be exerted unless the pains are weak, and even then, not in the intervals between the pains.

In the section of this book entitled "Notes and Discussions" is material serving to elucidate difficult points in the general text, as well as a discussion of cognate subjects such as evolution, teratology, theories of eclampsia, diet, etc., and a description of various operative procedures. The work closes with a classified bibliography, a glossary, and an index.

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The General Field

Conducted by A. G. CRANDALL

The Dietetic Advantages of Sauerkraut

There are many people who seem to affect a snobbish attitude toward the humble cabbage. They even make sarcastic remarks about the savory odors given off by this well-known vegetable in the process of cooking. They point out the fact that for some people cabbage, even most carefully cooked, is difficult of digestion. In the estimation of these people cabbage, as compared with that social favorite, celery, is plebeian in the extreme.

This is truly unfortunate, because cabbage can be raised in great abundance upon limited areas. Should it become a general favorite, there is practically no limit to the extent to which it can be produced, thus supplying this toothsome vegetable at a relatively small expense.

All that is necessary for one to acquire a wholesome respect and fondness for cabbage is to learn to like sauerkraut. It is true that the aroma of sauerkraut when being prepared for the table is more pervading than delicate, but this slight disadvantage is readily overlooked by those who have acquired a fondness for the ultimate result.

Sauerkraut is prepared with salt and yeast; the sugar content of the cabbage is fermented, which forms lactic acid. This produces a marked action upon the fibers of the cabbage, thus rendering this vegetable much more digestible. The lactic acid contained in the sauerkraut produces a disinfecting process in the intestine, so that in cases of intestinal catarrh sauerkraut is said to have a very favorable effect, the pleasant, sour taste acting as an appetizer, thus producing an increased desire for ordinary articles of food and in every way promoting the physical well-being of the patient.

The Pennsylvania farmer who complained that he had had a hard year, with short crop of cabbages, and was only able to put up 3 barrels of sauerkraut for use in sickness was evidently in a position to appreciate the value of this often-despised food. Perhaps the Department of Agriculture may wake up to the importance of educating the masses as to the value of cabbage and distribute some useful pamphlets among the loyal constituents of the various members of congress.

Education or Ethics

Hard facts, when properly demonstrated, admit of no argument in rebuttal. They are accepted at their face value.

A prominent clergyman takes the position that the vice problem in the cities can best be solved through the uplift identified with the church. Such a statement will be regarded with greatly varying degrees of favor or disfavor, exactly as may be reflected by the individual temperament. While the aid of the church is greatly needed, the first essential of the solution of the venereal problem is to spread abroad a knowledge of the facts. After that comes the question of ethics.

With the modern tendency to estimate the value of everything, including health, in actual dollars, it is somewhat surprising that the financial loss in the cities through the social vice and its pathological consequences has not received more attention. With one class

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of citizens clamoring for segregation and another class proving with conclusive arguments that such policy is a failure, there seems to be need for education as to the spread of venereal contagion, even among those who are supposed to have given the matter considerable attention.

The ordinary uneducated, struggling, narrow-minded, but fairly well intentioned, family should be instructed in no uncertain terms as to just what dangers are incurred by any lapse whatever from the strict moral code. Such information possessed by the body politic would work a remarkable transformation in a comparatively few years.

Attacking the Health Resorts

There are situated in various parts of the United States numerous mineral springs, which have become popular resorts for those who wish to secure much-needed recreation and a complete change in their daily regimen.

A well-known physician, who writes with the purpose of educating the public as to the fallacy of much that has been accepted as medical science, has recently given his attention to such resorts with the evident intention of placing before the lay reader the absurdity of patronizing these places; that is, with any idea of securing benefit from the waters.

While it is true that exaggerated claims may have been made by the owners and proprietors of these medicinal springs, it does not by any means follow that they do not in the main accomplish practically all that is claimed for them. There are many people, including druggists, and even physicians, who will recommend an artificial mineral water as containing more of the supposed ingredients of the healthful spring waters than the actual waters do themselves. But such substitutes have never become popular with people who have sufficient intelligence to form any accurate conclusion as to their physical effect.

There may be more lithia salts in a combination of distilled water and the commercial mineral substance which forms the substitute, but people of any reasonable powers of observation who have at various times flushed themselves with good lithia water will be very slow to accept the substitute as possessing the same advantages. The well-conducted health resort with medicinal springs as a basic attraction will continue to attract patrons, and patrons in turn will be benefited by partaking of the waters, irrespective of the attacks of sensational writers. The spas of the continent of Europe have for centuries been an inspiration for more wholesome methods of living. And the same can be truthfully said of many famous American springs.

The Apple and the Dreambook

The apple of gold in the vesta argenti has a pleasing sound to those who lack familiarity with both metals, but even this ancient allegory of brilliant hue fades in comparison with the recommendations of various health cranks as to the therapeutic advantages to be derived from nocturnal engorgement with the ordinary apple of commerce.

The liver is said to be about the most patient organ of the human body. The stomach will put up with a good deal, but once in a while revolts at the dietetic insult and issues a wholesome warning. Not so the liver—it, like the patient camel, proceeds apathetically along, bearing its heavy burdens until at last, like the camel also of story, it succumbs to the last straw—often the

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straw supplied by the druggist with the ice-cream soda.

Long before this tragical ending, however, this noble, patient organ—the liver—has probably been subject to the apple treatment.

When everything else fails, the philanthropist who writes articles on health and hygiene for popular reading falls back on the apple. Under his illuminating prism of exaggerated description, the apple discloses all the spectral rays by day and surrounds the victim of the apple habit with other specters by night.

Most families preserve among their choicest legends a series of dreams narrated at the breakfast table by the family victim of the nocturnal apple habit,—dreams by the way which are intended to record upon the brain of the dreamer the slow, cumulative wrath and indignation of the patient liver.

There is a great demand on every side for a larger production of apples. The apple properly cooked as a vegetable possesses great merit, not only as affording an easy solution of many culinary problems, but as providing an excellent quality of bulkage for the alimentary canal, and when moderately partaken of in a raw state during the earlier hours of the day it presents many advantages as a salad element in the daily ration. When, however, the apple is consumed at bedtime as a sort of sacred rite, the utility of the dreambook at once becomes apparent. A dreambook could well and consistently be supplied by the grocer to all his customers who have the nocturnal apple habit.

A Peculiar Form of Insanity

There have been abundant instances where people with everything apparently to make life pleasant for them have suddenly retired from their customary haunts, avoided their normal associates, and have taken up the life of the recluse, no apparent reason being known to their friends.

Of course, the natural conclusion is that people who exhibit such unusual tendencies are not quite normal in their mentality. Other explanations for such eccentric conduct is that such people are influenced by a subconscious personality, which gradually asserts itself and overmasters the normal tendency.

Many interesting reports have been made from time to time, although little has been determined as to the motive for such peculiar actions. Recently a mystery of this type was unraveled in New York.

It is said that many people are peculiarly subject to the gregarious instinct, being impelled to assume the characteristics, modes of thoughts, and types of action of their associates. In the instance above referred to, a New Yorker of well-known family, a family name individual because of its achievements, withdrew from all his customary haunts, laid aside the luxurious dress and personal habits to which he had been accustomed, secured accommodations in a cheap lodging house, and took upon himself the name of Smith.

The psychologist searching for a motive might naturally be impressed with the fact that in this instance an overruling gregarious instinct had so taken possession of this individual that he had been unable to resist the temptation to assume the personal habits and even the cognomen of that most numerous type of the earth's population—the Smiths.

Indigestion and Heart-failure

One of the most serious losses incurred by the average community year by year is the untimely death of many most

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useful citizens from acute indigestion and heart-failure.

Few well-informed people failed to note the recent exposure of the so-called "arson trust," which was primarily designed to make the fire-insurance business profitable,—at least to the members of the trust. The man most active in the exposure of this crooked combination was Mr. Louis S. Amonson. Mr. Amonson was 52 years of age, and his recent sudden death from indigestion and heart-failure was most unfortunate, as, with his natural abundant vitality, he should have been able to contribute his helpful personal influence to public affairs for many years.

Intense concentration of the mind for long intervals, associated with an excellent appetite and normal good digestion, seems to result in many similar disasters.

There is no doubt that great executive ability in business and public affairs may be combined with exceedingly dense ignorance of the essential problems of digestion. The Health Departments of various cities could well afford to issue a pamphlet on health failure and its causes, for distribution in sumptuously appointed business offices. The yearly waste in useful human lives is one of the misfortunes which makes the Titanic disaster seem small by comparison.

Fortunate Canada

Just now, when the writhings and groanings incident to preparing a new tariff are distinctly audible from Maine to Oregon, Canada looks on with a smile of amusement. The citizen of the United States prides himself that he is wise to almost any kind of a game, but compared with the Canadian he is a child.

In Canada they have a tariff which can be regulated in the time nominally required to mail a letter from one part of the Dominion to the other. The modification of the Canadian tariff is based upon hard rules of business, and nothing else.

If there is any business proposition in which there should be absolute certainty, or the next thing to it, it is in the question of duties upon goods imported to this country from abroad, yet, taking one time and another, even the eccentricities of the weather become stable and reliable as compared with the tariff on imports.

There is apparently no reason why this situation should continue more than a few weeks except that it places opportunity in the way of the professional politician. A year or two ago the United States passed through a process of internal convulsions lasting for months to pass a reciprocity bill recommended on every hand by the astute (?) politicians as a scheme by which the United States could get the best of Canada. The Canadians promptly declined to be in any way identified with any business propositions recommended by the United States politicians.

While the United States has devoted an inordinate amount of time and political emotion to the question of how to exclude the Chinese, the Canadians promptly adjusted the matter in such a way that by the payment of five hundred dollars the native of China can be admitted into Canada, from which point he usually proceeds by blind baggage to the United States. In other words, as has been well expressed, the Canadians get the five hundred dollars and the United States gets the Chinese.

Sometime, when the business of politics has become less profitable, it may be that we can have a business-like tariff.

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Original Articles

THE NERVOUS SYMPTOMS OF PELVIC DISEASE.*

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THE fact that pelvic and nervous diseases frequently coexist in the same patient is well known and makes it imperative that we should entertain clear views as to the relations, if any, existing between them. The questions arising may be briefly stated as follows:—

First.—Is there any relation between pelvic disease and the great neuroses, neurasthenia, and hysteria?

Second.—What are the relations, if any, between pelvic disease and epilepsy, chorea, the other functional nervous disorders, and the insanities?

Third.—Do pelvic diseases give rise to special nervous symptoms? If so, what are they?

Fourth.—Upon what principles should operative interference be based?

The answer to the first question necessitates a brief consideration of neurasthenia and of hysteria. These affections had best be considered separately.

Neurasthenia is an affection from which the physician too often turns aside as uninteresting,—as being a condition rather than a disease. In reality, it presents a well-defined symptom group which, while it varies in detail, is always expressive of fatigue. A term which I regard as especially applicable to it is, "the fatigue neurosis." Every symptom is expressive of weakness, irritability, ready exhaustion. At the outset it becomes important to differentiate this condition from those states of general ill-health which accompany or follow visceral and other bodily diseases. States of general ill-health the result of disease of the digestive tract, of the heart and blood-vessels, of the kidneys and other structures do not justify the term neurasthenia; even the expression

* Read before the Philadelphia County Medical Society, April 9, 1913.

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"neurasthenia symptomatica" is misleading, for they do not constitute neurasthenia in any sense of the word.

The symptoms of neurasthenia are those of nervous exhaustion proper. It is not my intention nor would time permit to consider them in detail. Let it suffice to say that the motor symptoms are those of weakness, while the sensory symptoms consist of the manifold aches and pains of chronic overtire, general sense of fatigue, headache, backache, limbache. Further, the symptoms presented by the circulation, the diminished force of the heart's action, coldness of the extremities, and again the feebleness of digestion, the diminished peristalsis of the bowels and the constipation, are alike expressive of a diminished innervation. Hand in hand with this nervous weakness, which expresses itself in so many ways, there is also the cardinal fact of nervous irritability. Weakness and irritability go hand in hand. Just as the neurasthenic presents an exaggerated knee-jerk, so does he present an exaggerated reaction to impressions generally.

Briefly restating the facts, we find that the two cardinal conditions of the fatigue neurosis, neurasthenia, are (1) persistent nervous weakness, and (2) increased nervous irritability, that is, increased reaction of the organism to impressions from without. When we apply this interpretation of neurasthenia to the study of the diseases of the various special organs, we find at once that a ready explanation is presented for many strange facts. For instance, an eye defect may remain undiscovered for years; when, however, neurasthenia has been established, use of the eyes may bring on headache, or may make headache worse, if present, because the resistance to fatigue has been diminished; in other words, an exertion so slight as to be utterly inadequate to evoke any symptoms whatever in a healthy man, may in a neurasthenic rapidly bring on a fatigue headache, in the present instance termed an "eye headache." In the same way, a local defect or disease in other portions of the body may remain undiscovered so long as the general health remains good, and may only make itself felt when neurasthenia becomes established—*i.e.*, when the nervous system presents the phenomenon of increased or abnormal reaction to local impressions. This fact has especial application to gynecology. It is well known that a woman with a laceration of the cervix or perineum, a displacement, or possibly a prolapsus of an ovary, may make no complaint so long as her general health remains good; not infrequently she fails to seek medical advice for the pelvic condition until neurasthenia has become established.

These considerations of neurasthenia warrant the following almost self-evident conclusions:—

First.—Neurasthenia may exist independently of any local disease, pelvic or otherwise.

Second.—Neurasthenia and pelvic disease may exist independently in the same individual.

Third.—When pelvic disease coexists with neurasthenia, the pelvic symptoms may be more readily recognized by the patient and therefore become more prominent, because in neurasthenia the reaction of the nervous system to abnormal or pathological impressions is greatly increased. Without pausing to

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apply these conclusions to the question of surgical intervention, let us turn our attention to hysteria.

Hysteria is another affection which the physician, in the hurry and pressure of his work, frequently regards with inadequate attention. It also is an affection which the time at our disposal will not permit us to consider in detail. However, it must be clearly differentiated from neurasthenia. It may exist without the presence of a single fatigue symptom, just as it constantly exists without the presence of a single organic lesion. Like neurasthenia, it is an independent nervous affection. When we examine its symptoms, we are at once impressed by the fact that they are of psychic origin. I need not before this audience recall the elementary truths with regard to its anesthesias and palsies; that they never conform to the anatomical facts of nerve distribution; that an anesthesia of a leg is usually stocking-like, and that when a limb is paralyzed it is paralyzed as a whole; that frequently an arm is elided from the field of consciousness both as regards its motion and sensation, that is, is cut out as a whole. And what is true of the anesthesias and palsies is also true of the pains of hysteria. Most frequently these pains manifest themselves in the form of isolated and oval-shaped patches of excessive sensitiveness. These patches may be found upon any portion of the trunk or limbs, though they are most frequently met with in certain situations, more especially as a small oval area over the ribs just below the mammary gland,—the so-called "inframammary tenderness"; as a small oval area immediately above the groin, so-called "inguinal or ovarian tenderness"; as small spots or areas over the spine, so-called "spinal tenderness"; as a small area to one or other side of the spine below the inferior angle of the scapula. Painful areas are also met with in spots no larger than the tip of the finger on the scalp; also on the mucous membrane of the buccal and nasal cavities and of the rectum and vagina. Sometimes these areas are not only tender when pressed upon, but ache spontaneously. Especially is this true of the area over the groin. How much this inguinal pain was misunderstood, how much harm in a generation now gone by the mistaken term ovarian tenderness gave rise to, is still well remembered. The French, let us recall, even applied the expressive name "ovariennes" to the women who presented this symptom. I can still recall the surprise and mystery which resulted when in such a patient the supposed painful ovary was removed and the pain in the groin notwithstanding persisted.

The symptoms of hysteria are, as already stated, psychic. Charcot and Gilles de la Tourette laid great stress upon the increased suggestibility in hysteria, but it remained for Babinski to point out that the symptoms have their origin in suggestion,—in suggestion that may arise from causes within as well as from causes without the patient.

This suggestibility is pathological. An illustration will readily explain my meaning. Babinski, for instance, maintains that the sensory losses of hysteria are always the outcome of inadvertently made suggestions at the time the patient is examined by the physician. He claims, for instance, that the reason hysterical hemianesthesia predominates on the left side of the body is that the physician, being usually right-handed, has the brush or esthesiometer

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in his right hand and naturally tests the left side of the patient's body first, thus suggesting the anesthesia which he is trying to discover. If this test be performed upon a healthy person, no anesthesia can be induced, and it is this vulnerability to suggestion that constitutes the essential pathological factor in hysteria.

It can readily be seen how injurious in the case of an hysterical person incautious remarks and injudicious statements by a physician may be. There may be lodged in the patient's mind a fixed belief that she has some mysterious local disease, to which she only too willingly agrees to ascribe her nervous malady. The suggestion of an operative procedure is accepted readily and sometimes a long series of operations have thus their beginning. Everyone of us can recall such cases. One patient who was for a time under my observation had had a series of operations in which ovaries and tubes, uterus, appendix, and coccyx were removed; her pains still continuing, a surgeon chiselled off a portion of her sacrum. Another patient, the wife of a physician, having had all of her pelvic organs removed, insisted upon having her labia minora amputated, which was actually done. Another, after having her pelvis emptied, had first one kidney and then the other sewed fast, and, her sufferings continuing, she presented herself at the hospital demanding another operation upon the kidneys, declaring that they must have become loose again.

The fact is that the suggestion of local disease leads at times to results astonishing and almost incredible. One patient, being told that her teeth needed attention, had them all removed and artificial teeth substituted. Relief not being obtained, she passed from the hands of one dentist to another until she had accumulated thirteen sets of artificial teeth. Her symptoms persisting, she transferred her attention to her eyes and then began making the round of the oculists. Glasses after glasses were prescribed, but all with a negative result. Next she became convinced that her stomach was at fault; medicines, lavage, and diet after diet were tried without effect. Finally she had her stomach scrubbed out with a dental engine in Chicago. I never understood how this woman allowed her pelvic organs to escape.

The facts at our command in regard to hysteria justify the following conclusions:—

First.—Hysteria may exist independently of any local disease, pelvic or otherwise.

Second.—There is no essential relation between pelvic disease and hysteria, even when the two affections coexist in the same case.

Third.—While in hysteria there is an increased reaction to external impressions, this reaction is purely psychic.

Fourth.—The pain areas of hysteria bear no relation to disease of the deeper structures.

It is hardly necessary to discuss pelvic disease and epilepsy, chorea, and other nervous diseases. The truth can all be summed up in four words: There is no relation. The same obtains with regard to the insanities. The statement is sometimes made that insane patients who have been subjected to operation occasionally get well, but we should remember that a lucid interval

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or even an apparent cure sometimes follows a mere physical shock, such as a fall or other trauma. Indeed, a recovery is not an infrequent result of some intercurrent infectious malady, such as erysipelas or typhoid fever.

When we turn our attention to the nervous symptoms which can truthfully be ascribed to pelvic disease, we find that they are very limited. They consist of pain in the pelvis, pain referred to the back, to the sacrum, to the coccyx, to the top of the head, to the hips, and to the thighs. At the same time there are present in many cases more or less marked signs of general ill-health. These symptoms cannot be dignified by the name of a nervous disorder. They are merely a part of the symptom-group of the pelvic disease.

The fourth question, Upon what principles should operative interference be based? should, I believe, be answered as follows:—

The surgeon should operate for the pelvic condition itself. If he operates on a tear of the perineum, he should do so because the tear has resulted in mechanical difficulties—because it has given rise to a displacement of the uterus or perhaps to a rectocele, not because the tear occurs in a neurasthenic or hysterical woman. If he removes an ovary, it should be because the ovary is unmistakably diseased. If he removes an appendix, he should do so because the characteristic symptoms of appendicitis are present. If he sews fast a movable kidney, it should be because the mobility of the organ is such as to threaten mechanical obstruction of the ureter with its consequent hydrops of the kidney, or because the patient suffers from Dietl's crises. Operations should be performed, not for the relief of an incidental nervous symptom, but because of the local condition itself; just as we set a broken leg in an insane man, not because the man is insane, but because the leg is broken.

We should approach the subject of neurasthenia somewhat differently. In neurasthenia there is an increased reaction to local disease, and it is just as clearly indicated to correct local disease in neurasthenic patients as it is to give such patients glasses to relieve their ocular symptoms. It is important, however, in considering operations upon neurasthenics, to bear in mind that these patients are excessively sensitive to nervous shock. All gynecologists are familiar with the persistent nervous symptoms—the persistent surgical neurasthenia—that ensues in some patients after pelvic operations. In such cases the operation, if not urgently indicated, may with advantage be preceded by a period of rest and full feeding. In cases of hysteria, the surgeon should, of course, also restrict his operations to purely surgical conditions. Here much good can be done if he makes use of the operation, when accomplished, as a suggestion of restored health.

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REPORT OF A CASE OF CAT ASTHMA.

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That the emanations from certain animals give rise in susceptible individuals to asthmatic paroxysms has long been known. In his monograph on asthma, published thirty years ago, Salter cites several cases of asthmatic attacks induced by contact with various animals. The list of cases of *this* nature is not so short that the addition of another is of any especial interest, but there are one or two points in connection wth this group of cases, and their bearing on ordinary bronchial asthma, which I think might be well emphasized.

Miss E. P., aged 19, has had asthma since she was 6 years old. Until three years ago she had it only in the summer time, or when she caught cold, but recently she has had it also in the winter. Examination of the thorax shows some general hyperresonance, with wheezing râles all over the chest. The heart sounds are normal, and the area of cardiac dullness not enlarged.

Two years ago she went to visit a friend who had a pair of fine Maltese cats, spent the afternoon handling these animals, and had a violent attack of asthma that evening. At that time her attention was drawn to the possibility of a connection between cats and her asthma, and she recalled that her visits to that household were always followed by asthma. As far as she can recollect, she has never come in contact with Maltese cats without a subsequent attack of asthma. She was seen on December 31st. at which time she had had no asthma for three weeks, although some sibilant râles could be heard on deep respiration. She felt perfectly well as she left the office, and immediately later visited a second friend who had Maltese cats. At her request the cats were taken out of the room immediately on her arrival, but within half an hour she began to sneeze, her nose became "stopped up," and in an hour she became asthmatic. Her breathing remained more or less difficult the whole night, although she left the friend's house soon after supper.

In this patient the asthmatic paroxysms which are caused by contact with cats always begin with coryza, whereas her other attacks do not. They follow only exposure to Maltese cats. She has on several occasions fondled other breeds of felines without ill effects. Both she and her mother are convinced of the causative connection.

We hear so much today about the subject of anaphylaxis that it is hard to realize that less than a decade has elapsed since the discovery was made that injections of certain proteins rendered animals extraordinarily susceptible to a second dose of the same substance; but the newness of the anaphylactic idea is shown by the widespread tendency to use it as the explanation of all the incomprehended idiosyncrasies.

In 1910 Auer and Lewis showed that in anaphylactic shock in the guinea-pig there was obstruction to the passage of air in and out of the lungs, and attributed this obstruction, with experimental justification, to a spasm of the

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bronchial muscles. Led by these experiments of his colleague, Dr. Meltzer, in the same year, presented before the American Association of Physicians a paper in which he set forth the theory that bronchial asthma was a mild type of anaphylaxis. He based his hypothesis not only upon the experimental evidence of Auer and Lewis, but also upon certain well-known medical facts. Thus he cites the fact that plant pollens produce hay fever only in sensitive individuals, and he also quotes cases of asthmatic paroxysms from animal emanations as instances of anaphylactic asthma. He suggests that the toxic factor in many cases may be the absorption of some digestive protein product. He further remarks that anaphylaxis is specific, and states that these animal asthmas are also specific,—for instance, that an individual who is sensitive to cat emanations will be non-sensitive to horse emanations. While this statement is generally true, it is by no means without exception. Gabbit reports a case of cat asthma in which the patient was sensitive to a number of the felidæ, while Salter records the case of a gentleman who was affected by either dogs or cats, and also a remarkable instance of hereditary susceptibility in which some members of the same family were sensitive to cats, others to guinea-pigs, and others to horses.

Manoiloff presents much more tangible evidence as to this anaphylactic origin of asthma. He first points out the fact that eosinophilia is a symptom found in both anaphylaxis and asthma. He performed a few experiments in which he injected the blood of asthmatics into guinea-pigs, and two weeks later solutions of Charcot-Leyden crystals from the patient's sputum, which gave rise to asthmatic symptoms. When normal human serum was used, the animals were not sensitive to the Charcot-Leyden crystals.

Eustis considers asthma to be a toxemia, and suggests as the possible toxic cause beta-iminazolylethylamine, which for convenience we shall call by its trade name, histamine. This basic substance has been found as one of the products of the putrefaction of histidine. It has also been shown to occur in ergot. As has been shown by Dale and Laidlaw, the intravenous injection of histamine produces a marked obstruction of the respiratory movements, which in the guinea-pig often proves fatal.

Thus we have united the links of a chain for an interesting theory of the causation of asthma: The individual in some unknown way becomes sensitized; then owing, perhaps, to putrefactive action there is formed, by splitting up of the proteins, histamine or some allied base, which acts upon the bronchial muscles of the sensitized individual, causing the asthmatic paroxysms. The normal man does not develop asthma because he is not sensitized. The asthmatic has his attacks only paroxysmally because some determining cause is necessary.

Attractive as this theory is, there are several objections to its acceptance, at least as applicable to all cases. In the first place, I confess, when we say that a man has become sensitized to asthmatic poison, I cannot say that we have progressed very much beyond the statement that he has an idiosyncrasy, unless we can show how he became sensitized. Moreover, the fact that asthma often shows a strong hereditary tendency makes it difficult to apprehend how

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the sensibilization, in the meaning of the anaphylactionist, could have taken place.

The fundamental error, however, in all this line of reasoning is the assumption that all cases of bronchial asthma are of the same, or even of similar, origin. Meltzer quotes, in support of his theory of the anaphylactic origin of asthma, the occurrence of hay fever in sensitive individuals, as well as attacks of asthma from animal emanations. Now there is a strong similarity between the so-called "hay asthma" and the various animal asthmas, but there is a very marked dissimilarity between animal asthma and the ordinary type of bronchial asthma. Salter says that there is a type of asthma "closely resembling that which accompanies hay fever" which is caused by contact with cats. It has been repeatedly pointed out that in these cases the asthmatic attacks are regularly accompanied by signs of irritation of the mucous membranes of the nose and eyes. In my own case the patient herself sharply distinguished, without any suggestion from me, between her ordinary asthmatic paroxysms and those which were superinduced by handling cats. She volunteered the information that her attacks of cat asthma always began with coryza and nasal obstruction, whereas her other paroxysms never did.

There have been two explanations of the mechanics of the asthmatic paroxysms; one supposes it to be the result of a spasm of the bronchial muscle, and the other regards it as acute edema of the bronchial mucosa. I can see no reason why we should reject either of these theories. I am strongly of the opinion that some cases are of spasmodic origin, and that others are of a congestive origin. If we recognize two types of pathological conditions as causes of paroxysmal dyspnea, we can understand why it is that one group of cases will be relieved by one series of measures and the other group by an entirely different line of treatment.

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ON THE EFFECT OF SCARLET RED IN THE TREATMENT OF GASTRIC AND DUODENAL ULCER.*

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THE efficacy of any drug in the treatment of a special disease is at times most difficult to estimate, especially in those instances in which the disease has a tendency to heal of its own accord. It is therefore with some hesitation that we here advocate the employment of scarlet red in the treatment of certain cases of peptic ulcer; however, if it can be demonstrated that some cases of ulcer which have resisted other means of treatment have apparently healed under the influence of this dyestuff, it is believed that there is sufficient justification for giving the remedy a distinct place in the treatment of this affection. It must, however, be distinctly noted in advance that there has been no desire on our part, in advocating the use of this drug, to displace the time-honored rest-cure treatment of Leube or the more recent cure of Lenhartz, but simply to recommend its employment as a useful adjuvant in the treatment.

We are greatly indebted to Dr. John Staige Davis, who, in his admirable work on "The Effect of Scarlet Red on Defects in the Mucous Membrane of the Stomach,"[1] first suggested the use of this drug in the treatment of ulcer of the stomach, and who proved its usefulness experimentally in animals. "It occurred to us," he says, "that possibly ulcers of the alimentary tract, especially ulcers of the stomach, might be benefited by the use of scarlet red, if it could be brought into contact with the ulcerated surface. There was no reason to believe that this dyestuff would not have a definite stimulating effect on the epithelial edges of these ulcers, as local applications of this substance to sluggish ulcers of comparable size on mucous membranes in other situations caused definite epithelial stimulation and rapid healing. All that is necessary for the healing of such an ulcer is for healthy mucous membrane to grow across its floor and remain intact, and it seemed possible that the mucous membrane of the ulcer edges might be stimulated by the scarlet red and thus accomplish the desired result. Proceeding on these premises it seemed wise to undertake some experimental work on animals before attempting to administer this substance to a patient suffering with gastric ulcer."

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* Read at the Fourteenth Annual Meeting of the American Therapeutic Society, Washington, D. C., May 5 and 6, 1913.

[1] Johns Hopkins Hospital Bulletin, Nov., 1912.

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Davis calls attention to the following properties of this dyestuff: "Scientific name, Tolueneazotolueneazo-betanaphthol. Commercial names, Biebrich Scarlet R. Medicinal; Oil Scarlet; Red B. Oil, Soluble Extra-concentrated; Ponceau 3 B.[2]

Method of Preparation.—It is made by a combination of amidoazotoluol and betanaphthol, and has the formula:—

$$C_6H_4(CH_3) - N = N - C_6H_3(CH_3) - N = N - C_{10}H_6OH \text{ (Beta).}$$

Color.—It is a reddish-brown powder, which gives a scarlet-red color in oil solutions. It cakes about 175° C. and melts at 184° to 186° C., forming a dark-bronze, shiny mass. At about 260° C. decomposition takes place and heavy brown fumes are emitted.

Taste.—The powder and also the oil solution are tasteless.

Reaction.—A 1 per cent. solution in neutral oil is neutral to litmus.

Solubilities.—It is insoluble in water and urine, even after boiling. It is soluble in alcohol, ether, and chloroform, olive oil, fats, fatty oils, turpentine, warmed petrolatum, and paraffin. One gram of finely divided powder, heated gradually in 100 c.c. of olive oil to 200° C., remained in solution for two days or more at ordinary room temperature. Approximately a 2 per cent. solution can be made, but the scarlet red does not stay in solution for any length of time, and tends to precipitate at once on cooling.

A reaction which will specifically identify this dyestuff has not yet been discovered. There are, however, a number of color reactions with various acids, which we will not consider at this time.

The gastric juice, experimentally, has no effect on the scarlet red.

X-ray Findings.—This material casts no shadow on an X-ray plate.

Bactericidal Properties.—A luxuriant growth of *Bacillus coli* and also of *Staphylococcus aureus* was obtained in twenty-four hours from both agar and bouillon cultures intimately mixed with 1 per cent. oil solution of scarlet red. This seems to show that this substance has little, if any, bactericidal property."

Davis's conclusions as to the effect of this substance are as follows:—

"The dyestuff used in this series of expeirments is not toxic and apparently has no deleterious effect on either dogs or rabbits. When given by the mouth it is a fat-selecting vital stain. In the course of months the stain is gradually eliminated. Subcutaneous and intraperitoneal injections stain only the fat in actual contact with the scarlet-red oil solution. It is difficult to say from these operative experiments whether the scarlet red has, or has not, a definite stimulating action on the epithelium of defects in the gastric mucosa. However, the scarlet-red oil solution caused a more rapid and better developed growth of epithelium in the group in which it was used than occurred in the duplicate group where plain olive oil was used. The results with dry powder were not so favorable experimentally, but this may have been due to the fact that the material was not continuously in contact with the denuded area. We

[2] "Organic Coloring Matters," Schultz and Julius (Green), 1904, p. 108, No. 150.

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were unable to determine the relative effect of the scarlet red on chronic gastric ulcers, as it was impossible to produce chronic ulcers in dogs with controls of exactly the same size. Our experiments are suggestive, and, as this dyestuff may be safely administered, we feel that it is worthy of a thorough clinical trial."

Scarlet red may be administered in doses of from 15 to 20 grains, three or four times daily, without producing the slightest toxic effect, provided a pure preparation be employed (Biebrich). It is best given in 7½-grain konseals, 2 of which may be taken three or four times daily before meals. It may, however, be administered in much larger doses, and only after very large continuous doses can the odor of camphor be detected in the urine. Not the slightest toxic effect of this drug could be observed in any instance, during its employment in over one hundred patients.

In this study we have selected from our records 37 cases of ulcer in which scarlet red was employed in the course of treatment. In the largest proportion of these cases a most beneficial effect seems to have been obtained from its use. We have not included in this report those cases in which the Leube or Lenhartz cure had been undertaken and which have made uneventful recoveries, inasmuch as most of such cases wou'd have recovered without the help of any drug whatever; but have included only those in which the result of the rest cure was unsatisfactory, and have added the ambulatory cases of ulcer which remained unbenefited by the usual treatment. Of the cases in which this remedy was employed, 18 were treated by the Leube rest cure, 11 by the Lenhartz treatment, and 8 were ambulatory cases. Of those treated by the Leube cure, 14, or 37.8 per cent., were cured; 2, or 5.4 per cent., were relieved, and 2, or 5.4 per cent., were not relieved. Of those treated by the Lenhartz method 6, or 16.2 per cent., were cured; 2, or 5.4 per cent., were relieved, and 3, or 8 per cent., were not relieved. Of those given ambulatory treatment, 2, or 5.4 per cent., were cured; 3, or 8 per cent., were relieved, and 3, or 8 per cent., were not cured. When we take into consideration the fact that all of these cases resisted the usual treatment (that is, were treated by the usual methods first, and were not relieved until the scarlet red had been administered) the result is most gratifying.

CASE No. 13, S. W., will illustrate this condition. The patient, a man aged 49 years, had been affected with a duodenal ulcer for a period of two years. He suffered with severe pain appearing three hours after meals; the pain was relieved by food and by alkalies. All of the other important symptoms of duodenal ulcer were present, *i.e.*, an epigastric and dorsal painful area, marked hyperacidity, and occult blood in the stools. The patient was given a thorough Lenhartz treatment, extending over five weeks; he was relieved during the course of treatment, but as soon as he was placed on solid food the pain began anew. Scarlet red was administered in 15-grain doses three times daily; the pain was relieved after a few doses, and the patient was able to be about in a few days. He continued this remedy for four weeks, and has remained well during the past six months.

Another interesting result of this treatment is illustrated by CASE No. 17, P.E., who was affected with gastric ulcer for a period of eight years, with periods of relief of from three to six months. He had been suffering from the present attack for four and one-half years. He had great pain after eating, and was forced to live on liquid and

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semisolid food on account of the excessive pain, nausea, and vomiting. He was unable to undertake the rest-cure treatment, and was given 15 grains of scarlet red three times daily. After three weeks he was able to partake of light solid food, and after four weeks was able to discontinue the remedy. After eight months he has had no return of his present disorder.

The results of treatment in the 37 cases in which scarlet red was utilized are illustrated in the accompanying table. In it are noted respectively, the location of the ulcer, the dose of scarlet red administered, the duration of treatment, and its effect. From the use of the remedy we believe we are justified in drawing the following conclusions:—

1. Scarlet red is a useful adjuvant in the treatment of peptic ulcer.

2. While it cannot replace the usual forms of treatment, when it is administered in conjunction with them it frequently renders the cure more effective.

3. As a help in the treatment of ambulatory cases it is of great service, and its effect seems to be even more favorable than that obtained from bismuth.

4. Its use need not in any way interfere with the administration of other remedies, such as the alkalies or belladonna, when indicated, and, in fact, the effect of the combination is at times most beneficial.

TABLE ILLUSTRATING THE EFFECT OF SCARLET RED IN THE TREATMENT OF 37 CASES OF PEPTIC ULCER.

No.	Name.	Age.	Sex.	Diagnosis.	Form of treatment.	Dosage per diem.	Duration of treatment in weeks.	Result.
1	S. J.	34	F.	Gastric	Leube	40	4	Cured.
2	R. E.	61	M.	Gastric	Lenhartz	60	5	Relieved.
3	J. S.	33	M.	Duodenal	Leube	45	3	Cured.
4	P. S.	30	M.	Duodenal	Ambulatory	45	4	Relieved.
5	S. M.	38	M.	Gastric	Leube	60	8	Cured.
6	H. C.	45	F.	Duodenal	Leube	45	7	Cured.
7	S. D.	31	M.	Duodenal	Ambulatory	50	4	Relieved.
8	J. R.	45	F.	Gastric	Ambulatory	45	3	Not relieved.
9	S. T.	33	M.	Duodenal	Lenhartz	60	4	Cured.
10	R. T.	40	M.	Gastric	Leube	45	4	Cured.
11	W. R.	42	M.	Gastric	Leube	45	5	Relieved.
12	D. J.	39	M.	Duodenal	Leube	45	6	Not relievel.
13	S. W.	49	M.	Duodenal	Lenhartz	45	4	Cured.
14	A. H.	42	F.	Duodenal	Leube	60	8	Cured.
15	P. J.	41	F.	Gastric	Leube	45	5	Cured.
16	K. D.	51	M.	Duodenal	Leube	45	6	Cured.
17	P. E.	24	M.	Gastric	Ambulatory	45	4	Cured.
18	B. S.	42	M.	Gastric	Leube	60	6	Cured.
19	A. M.	30	F.	Gastric	Lenhartz	45	3	Not relieved.
20	C. F.	37	M.	Duodenal	Ambulatory	40	4	Cured.
21	J. M.	25	F.	Duodenal	Lenhartz	60	5	Relieved.
22	L. M.	34	M.	Duodenal	Ambulatory	45	6	Not relieved.
23	D. M.	49	M.	Duodenal	Lenhartz	60	4	Cured.
24	D. R.	36	M.	Gastric	Leube	45	5	Cured.
25	S. D.	38	F.	Gastric	Leube	40	6	Not relieved.
26	R. C.	26	M.	Gastric	Lenhartz	60	4	Cured.
27	B. J.	38	M.	Gastric	Leube	45	5	Cured.
28	S. M.	65	F.	Duodenal	Lenhartz	45	6	Cured.

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No.	Name.	Age.	Sex.	Diagnosis.	Form of treatment.	Dosage per diem.	Duration of treatment in weeks.	Result.
29	S. L.	42	F.	Duodenal	Lenhartz	60	4	Not relieved.
30	S. D.	45	M.	Gastric	Leube	40	5	Relieved.
31	W. P.	60	F.	Duodenal	Leube	40	8	Cured.
32	C. W.	65	M.	Gastric	Ambulatory	60	3	Not relieved.
33	S. M.	52	F.	Gastric	Ambulatory	45	4	Relieved.
34	B. H.	51	F.	Duodenal	Leube	45	5	Cured.
35	C. B.	31	M.	Duodenal	Lenhartz	45	2	Not relieved.
36	D. J.	39	M.	Duodenal	Leube	40	5	Cured.
37	P. K.	43	M.	Duodenal	Lenhartz	45	4	Cured.

PULMONARY SYPHILIS COMPLICATING PULMONARY TUBERCULOSIS: ITS DIAGNOSIS, TREATMENT, AND PROGNOSIS.

By FRANK NEALL ROBINSON, M.D.,

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MONROVIA, CAL.

Since tuberculosis is the most widespread disease in the world, and syphilis is second only to it in frequency, there is nothing surprising in the fact that the two diseases are often associated in the same individual.

Too little attention has been paid this factor, not alone by the general practitioner, but by the phthisiotherapeutist, although Schnitzler, Fournier, Senator, Roberts, and others have often referred to the connection. S. Klein has emphasized the frequent combined occurrence of syphilis and tuberculosis, and points out the fact that about 41 per cent. of his cases show signs of syphilis.

Spengler pointed out long ago that numerous cases of tuberculosis develop in a hereditary syphilitic constitution, and it stands to reason that the constitution injured by the syphilitic virus is certainly more predisposed to tuberculosis than others. When one considers the widespread prevalence of syphilis, both hereditary and acquired, which is much greater than is generally supposed, it seems a wonder that more work along this line has not been accomplished.

Clinical experience in tuberculosis therapy, prolonged through many years, points to the frequent occurrence of lung syphilis, although anatomical proof of this fact at autopsy is difficult to obtain. The post-mortem findings, in hereditary as well as acquired lung syphilis, usually consist of a "fleshy, hypertrophic" lung if the case is in early life (there exists also, of course, the "white pneumonia" of the fetus, which is excluded here) or of not too long a standing in the adult. Later this picture is modified and one sees sclerotic changes analogous to cirrhosis of the liver, with "induration" of tissue and in some cases gumma. The bronchi will be found dilated through the indurated area, with occasional bronchiectatic cavities.

Symptoms.—Where there is a frank history of syphilis complicating pulmonary tuberculosis, it is a comparatively easy matter to keep the former

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in abeyance,—excepting in certain stages of the two infections,—and ultimately to bring both diseases under control. But where an innocent infection has taken place, or hereditary taint accompanies the tuberculous infection, and the patient can give no clear history of an infection with syphilis, upon what are we to base our diagnosis?

Certain symptoms of the objective variety occur which can at once place the physician on his guard and warn him that he has a dual infection of tuberculosis and syphilis to deal with.

First among these is the marked shortness of breath, not alone complained of, but noticeable in a case of pulmonary tuberculosis that has been only of short duration.

Secondly, there may be a primary affection of the larynx. This condition is generally complained of as having appeared first with hoarseness, and the picture is that of syphilis, and not of tuberculosis, upon inspection with the laryngoscope and reflected light.

Thirdly, these cases all show a marked increase in the bronchial symptoms. Large quantities of sputum, seldom less than 50 c.c. in twenty-four hours, are expectorated, the material being mucous or slightly mucopurulent.

Any of these symptoms or a combination of them, occurring in a case of pulmonary tuberculosis, should at once make the physician suspicious and lead him to examine for certain auscultatory sounds for purposes of confirmation.

Physical Examination.—With the patient stripped, and upon auscultation, a characteristic sound can be heard, especially above the "fleshy, hypertrophic" lung. It is a "rustling" murmur, first written of by C. Spengler, of Davos, Switzerland, and is audible at the usual site of lung syphilis, viz., over the junction of the middle and lower lobes, much more frequently than over the lower lobe. To describe it more precisely, it is an interrupted sound like "running water" or "waterfalls" in the distance, and is heard at the end of inspiration and the beginning of expiration. Another adventitious sound which is also characteristic is the so-called bronchial "burr" or "snoring" heard over the bronchi. But the most striking feature is the large extent of pulmonary involvement found on physical examination, and the otherwise seemingly excellent state of nutrition and healthy appearance of the patient.

Microscopic Examination of the Sputum.—Upon examination of the sputum microscopically in a stained specimen, one is struck by the small number of tubercle bacilli, and occasionally non-motile spirilla can be seen. Upon staining the leucocytes in the sputum, there is found a great disproportion between the number of the polynuclear and that of mononuclear cells, there being a relatively high percentage of the polynuclear variety.

Wassermann Reaction.—If any doubt remains after the physical and microscopic examinations, recourse can be had to the Wassermann reaction.

Treatment.—With regard to the treatment of pulmonary syphilis complicating pulmonary tuberculosis, the fact must be emphasized that it is precisely under these circumstances that an energetic mercurial treatment is absolutely contraindicated. Mercury, if used at all, should be limited to mild

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inunctions, and even then administered only at intervals. Mercurial medication is badly tolerated by the tuberculous syphilitic, in the first two stages of syphilis especially. Iodine is indicated above all, and it is here that we see it do the most good in the shortest time.

It is most natural to expect that the happy results will be shown first in those cases that are of short duration, while in long-standing (cirrhotic) cases they will be slower in appearing.

My preference, in the treatment of these cases, is for the official tincture of iodine, given in a wineglassful of milk, instead of the iodide of potassium or sodium, because it is not so rapidly eliminated and seldom causes iodism or gastric disturbances. The dose varies with the individual, and is from 2 to 5 drops three times daily, up to 10 or 20 drops.

Until recently I had avoided the use of salvarsan in lung syphilis complicating lung tuberculosis, not knowing what effect the drug would have on the latter affection; but lately I had a case of "apparent cure" of the tuberculous condition, but which still had a slight cough and expectoration that iodine did not entirely relieve. This case showed a marked (+ + +) Wassermann reaction; 0.4 gram of salvarsan was given intravenously with the most happy results, both cough and secretion entirely disappearing.

Another of my cases, actively tuberculous, became infected with syphilis (initial lesion). Realizing the extreme danger, I gave 0.6 gram of salvarsan intramuscularly, with rapid clearing of the chancre (five days) and no deleterious effects as regards the tuberculous infection.

Prognosis.—It has long been known to those working in pulmonary tuberculosis that infection with tubercle bacilli in a syphilitic bespeaks a bad prognosis, and, *vice versâ*, that a syphilitic infection implanted on pulmonary tuberculosis hastens the course of the latter. These conditions are modified, however, according to the stage of the first infection in which the second infection takes place. When tuberculosis attacks a syphilitic subject in the primary and secondary periods the prognosis is very grave, but in the tertiary period it is somewhat better; the mildness in this stage is due to the tendency to cirrhosis in the lung more than to the exhaustion of the syphilitic virus.

Why does such a grave type of tuberculosis develop in the presence of a florid secondary syphilis? This can only be explained by the fact that the explosion of syphilis in the blood deprives the latter of its organic defensive properties, so that a natural barrier to the extension of the second infectious process is removed.

When syphilis attacks a tuberculous subject, precisely the converse is found to be the case, the influence of the secondary infection depending here likewise upon the stage of the tuberculosis. In the so-called "pretuberculous" stage, and in patients of the first stage whose general condition is good, the prognosis is generally fair, but in cases whose condition has been undermined by the primary infection the prognosis is uniformly bad.

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SORE THROAT AND DIPHTHERIA.*

By HYMAN I. GOLDSTEIN, M.D.,

CAMDEN, N. J.

Several recent occurrences have prompted me to write on this subject, although, on hurried thought, it would seem a thoroughly understood one.

First, the large number of epidemics of sore throat that have occurred In Boston, Philadelphia, Baltimore, New York, Chicago, and in our own city.

Second, the recent epidemic of diphtheria in Camden.

Third, the edict of the local Board of Health, that physicians shall report cases of tonsillitis as a contagious disease.

Fourth, the notice given to physicians by the Board of Health, that they should send culture smears to the State Laboratory at Trenton, and keep all cases of diphtheria under quarantine until negative reports are received from the laboratory.

Fifth, the unnecessary and ofttimes serious delay that may be entailed in waiting for a bacteriological report, and the disadvantage attending prolonged quarantine by reason of the persistence of positive cultures in apparently cured patients, causing much hardship to some of the patients and much friction between the attending physician and the patient's relatives.

Sixth, the passage of a law, July 6, 1911, by the Senate and Assembly of New Jersey, that the physicians shall receive from the disbursing officer the sum of ten cents for each case of contagious disease (tonsillitis apparently included) reported to the Board of Health.[1]

Seventh, the delay in opening the Municipal Hospital in Camden.

Eighth, the conflicting opinions of different investigators as to the contagiousness of certain types of tonsillitis.

Ninth, the recent development of more scientific and specific methods of treating these conditions.

Sore Throat.—The affections commonly grouped under the term "sore throat" often present considerable difficulties, both in diagnosis and treatment, and are at times among the most trying cases that the physician is called upon to attend, especially among children. The complaint of a child to its mother of a sore throat fills her with anxiety. The doctor having arrived, her first question is, "What is it? Is it serious? Is it diphtheria?" And the physician is expected to give the diagnosis forthwith. At times this can be done, but in numerous cases a decision presents many difficulties and it is always advisable to exercise reserve in giving a definite opinion.

The tonsils are a source of trouble to many people, and are subject to various forms of inflammations, including, in particular, streptococcic and

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* Read before the Camden County Medical Society, Dec. 10, 1912.

1 Chapter 381 of the Laws of 1911; printed in Circular No. 125, page 2, of the State Board of Health Laws.

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pneumococcic sore throat, lacunar (follicular) and parenchymatous tonsillitis, and the local manifestations of diphtheria.

Nature and Etiology of Tonsillitis.—Acute tonsillitis is an inflammation of the parenchyma of the tonsils and of the lacunæ or crypts in these organs. The most important predisposing cause is the rheumatic diathesis. Rheumatism has been assigned as the poison which causes about 50 per cent. of the cases of acute tonsillitis, and it is frequently—in children, at any rate—an easy matter to trace a history of rheumatism, either in the patient himself or in the other members of his family. A most common exciting cause is getting the feet wet. At times the disease is so prevalent that it would seem that some infectious germ capable of exciting the disease were in the atmosphere. Where one member of a family has acute tonsillitis, other members are often subsequently attacked, so that the disease is, at times, considered contagious. But exposure to certain of the known contagious diseases, especially scarlet fever and diphtheria, frequently is followed by an attack of acute tonsillitis, the organisms most commonly found in the exudation being staphylococci, streptococci, and pseudodiphtheria bacilli. I desire to emphasize the fact that although several cases have occurred repeatedly in the same family we cannot say that this occurrence is sufficient to prove that the disease was propagated by contagion and therefore should be reported as a contagious disease, since the supposed contagion would also be explicable on the supposition that the patients had been equally exposed to an epidemic influence—as infected milk, etc. Another significant fact is that there is a marked discrepancy in the intervals separating the cases occurring successively in the same family.

These sore throats resemble influenza, are not scarlatinal, and may similarly be associated with rheumatism, and there may be a pathological (streptococcic) relationship between them. It must not be assumed, however, that all tonsillitis is necessarily rheumatic.

The tonsils, in these conditions, present a deposit of a white material in patches of greater or less size. This material plugs up the lacunæ and consists of epithelial cells, pus-cells, granular matter, and bacteria.

In the case of streptococcic sore throat, a culture from a swab will give either a pure growth of *Streptococcus pyogenes aureus* or a mixed growth of staphylococcus and streptococcus.

Several writers have referred to epidemics of sore throat that prevailed in Chicago, Baltimore, and Boston for several months. The micro-organism isolated was an encapsulated hemolytic streptococcus of high virulence. It appeared to occupy a position between the ordinary hemolytic streptococcus and the *Streptococcus mucosus*. It was not a pneumococcus. The capsule and high virulence were probably the result of frequent human passage and might serve to explain the unusual tendency to complications and the general severity of the disease; this was suggested by the increase of the capsular substance on animal passage and its loss on artificial media. In Chicago it was conservatively estimated that over 10,000 persons were victims of the epidemic of sore throat. Of the total of 622 cases investigated by various observers, 87 per cent. were users of milk from a certain dairy—Dairy X. Of 19 fatal cases

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investigated, 79 per cent. were users of this milk. A comparison of the prevalence of sore throat among consumers of X milk with that of consumers of milk from another dairy in the same neighborhood showed the morbidity ratio to be fourteen times as great among the former as among the latter. An epidemic of mastitis involving 4.6 per cent. of the cows supplying milk to Dairy X occurred during the winter months. Sore throat of the epidemic type was prevalent among the farmers and milkers supplying Dairy X. Often, bovine mastitis and human sore throat prevailed on the same farm at the same time. A virulent streptococcus was isolated from the milk of a cow with mastitis and from the throat of a girl on the same farm, who had been ill with sore throat and arthritis. The days on which the most striking failures of pasteurization occurred shortly preceded the great outbreaks of sore throat.

This disease may be both milk-borne and milk-bred.

In Baltimore, last winter, an epidemic of sore throat broke out, which was similar to the ones in Boston and Chicago. The most common organisms found were the pneumococcus and streptococcus. According to Hirshberg, it was impossible to prove either milk, water, or food responsible for the spread of the epidemic. The Boston epidemic had been ascribed to infection from a certain milk supply, but this was not proven. Jacobi had always spoken of streptococcus sore throat as a contagious infectious disease, but that was in the early days of bacteriology.

Now, if we assume that the infection occurs through milk, what is the point of entry? It would seem, from the Boston and other epidemics, that infection can occur through the tonsils without difficulty. Yet some of the cases may have been infected through the gastrointestinal tract, as several of them had peritonitis; in these gastrointestinal cases the tonsillitis might be considered to be of hematogenous origin.

Were different streptococci the cause of the different epidemics? The epidemics in the different parts of the country resembled each other very much, and it seems that they were the result of one definite cause. From the reports made it seems that many of the patients were infected through the milk directly, and that secondary cases were few, if indeed they existed at all,—that is, the infection of streptococcic sore throat was probably not carried by direct contact or proximity, but, as I have suggested above, developed through equal exposure to an epidemic influence, *e.g.*, infected milk. The condition is thus not truly a contagious disease, but only an infectious disease.

Symptomatology and Treatment of Tonsillitis.—The most striking clinical features in these epidemics were the sharp onset, with invasion always in the throat; high fever, general adenitis, great severity, relatively slow pulse, and a grayish-white membrane spread over a large part of the tonsils.

In its onset and the general appearance of the symptoms tonsillitis differs from diphtheria, and it should be early differentiated from the latter disease, as much valuable time may be lost waiting for improvement from the inappropriate use of diphtheria antitoxin.

The acute symptoms subside in a few days. Among the complications

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may be mentioned otitis media, brain abscess, meningitis, endocarditis, peritonitis, erysipelas, orchitis, arthritis, and septicemia.

Blood-cultures are nearly always negative (except in septicemic cases). Hemolytic streptococci are found on smear cultures from the patches on the tonsil. The tonsils usually present a deposit of a whitish-gray membrane or patches closely resembling those seen in that most treacherous disease, diphtheria. Fortunately, the types of sore throat usually met with in our city have not been of a very serious character. The cases that I have had occasion to treat showed the follicular secretion forming a pultaceous deposit, not a true membranous layer like the deposit of fibrin, and which cannot be removed in strips like the latter. The patches are more prominent than those formed by a layer of fibrin, and their borders are more sharply defined. They are more easily removed than patches of fibrin recently exuded, and they disappear spontaneously more quickly. Finally, on close inspection the secretion may be seen to dip into the follicular depressions. The follicular deposit occurs without any abrasion of the mucous surface. The other symptoms of this Camden type of sore throat are those of severe follicular tonsillitis, and since they are well known I need not describe them.

Recently I have had many cases of sore throat, in a number of which the diagnosis of streptococcic (non-diphtheritic) sore throat was made. Out of a total of 85 cases investigated, only 3 smear cultures from the throat showed Klebs-Löffler diphtheria bacilli. These 3 cases had been diagnosticated as diphtheria, and antitoxin was administered before the report was received from Trenton. The other cases were typical cases of follicular tonsillitis and were not contagious. Should these cases be considered as reportable diseases?

The delay in waiting for an official report may at times prove dangerous. It is, therefore, my custom to inject a prophylactic dose of diphtheria antitoxin in cases that are at all suspicious. There is undoubtedly a need in Camden for a bacteriological laboratory with an experienced man in charge,—the laboratory to be under the control of the city Board of Health. I sincerely hope that the organization of such a laboratory will soon be considered by the Board of Health. It would not only save much time, but materially aid in avoiding disastrous epidemics.

(*To be concluded in the July issue.*)

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RECONSTRUCTIVE PERSONAL HYGIENE:
The Curative Force of Expert Regulation of Conduct.*

By J. MADISON TAYLOR, A.B., M.D.,
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(*Concluded from the May issue.*)

V.

HUMAN health, constituting as it does the basis of economics, is steadily coming to be recognized at its true commercial value. Breadwinners especially are awakening to this fact, and beginning to appreciate expert professional aid in perfecting and maintaining bodily efficiency. That physician is most wise and useful who omits no opportunity to estimate the fundamental factors in any problem presenting. Not only should he meet immediate exigencies, deal correctly with confronting difficulties, but he should search out and correct underlying and contributory causes, which may keep the individual on an inferior plane of potentiality. He should do much more,—make occasions and seek earliest possible opportunities to learn all relevant facts bearing upon the vital status of those in his charge. To accomplish this the home group requires constant and varied hygienic education.

The tendency is for each good citizen to make the best of his condition, to treat lightly unobtrusive ailments, to forge energetically ahead, ignoring slight symptoms, especially psychic phenomena, so that, too often, serious states are revealed only when far advanced or too late. This disregard of ailments is commendable; it makes for courage, endurance, renown; for character-building, success. Through such pertinacity only are the highest ends achieved. Carried to its logical limit, however, it lures the ignorant optimist to a state of perilous monism. Conversely, to err by overmuch self-searching leads to hypochondriasis, timidity, inefficiency. Most physicians are aware of this, but there are different degrees of awareness. Some impressions, even some convictions, are cloudy, inexact, or worse, fail to act as stimuli to right action. A nicety of judgment is needed in solving such

* I expect to present in turn certain allied subjects and show their direct relationship to clinical medicine. Among these are:—

Mechanotherapy: a large subject, including as it should any and all mechanical agencies capable of exerting therapeutic effects.

Orthotherapy: correct posture as a basis for conservation and repair.

Elasticity of Tissues: a factor in physical betterment; mobility of gross structures in its bearing on organic adjustments and readjustments, the maintenance of functional integrity in the tubular and hydrostatic mechanisms, etc.

Tension and Hypertension: as a factor in normal and abnormal functionation in (*a*) the psychic and (*b*) the physical domain.

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problems. For instance, it will prove a boon to a man complaining of a slight dyspepsia for the physician consulted to discover and rehabilitate an organism never brought to that degree of vigor and stability which, if attained, would have enabled him to attain greater power in life. Hitherto he may have been held by removable limitations to some petty hireling post. He may be handicapped by physical defects, be wasteful in method, underdeveloped, lacking in some essential particular, or all these may combine to keep him low in the economic scale. Unwarned, confident, he often assumes increasing burdens and presses on to, or beyond, the limit of his working powers. Then there ensues some minor or major accident, or disease, and a useful life is warped, mind and body are distorted, perhaps thereby also complicating important collateral domestic or financial interests. All this peril or dwarfing could have been avoided by adopting one of two courses of action: (1) Had the family physician been observant, wise, and, above all, dominant, corrective measures could have been instituted sufficiently early. (2) Had the individual himself been duly alive to his economic needs, advice would have been sought capable of establishing full working efficiency. It is equally important to avoid or overcome the oft-recurring tendency to apathy, nil admirari, laissez faire, "letting well enough alone," sinking into passive despair.

VI.

Parents are not blind to the value of first-class working efficiency, however insensible individuals may be to their own ultimate advantage. For the relief of actual disease or damage, even more so for fancied ailments, they are often willing to consult a physician. When they arrive at the conviction of a need for general or special betterment, they are usually prepared and willing to spend time and money on measures confidently endorsed. If, however, they would realize that the best and most complete plan is to consult a physician promptly and frankly or to seek advice periodically as to how health may be retained, powers improved, and a relative perfection achieved, by far the greatest gains in efficiency would follow.

Remedial measures are efficacious in proportion to (1) the judgment and care exercised by the adviser in searching out causes, and (2) the degree of co-operation supplied by the individual. Success depends upon a thorough estimation of the specific needs of each person.

Experience in endeavoring to solve the complex problems of indefinitely lowered health, to get that uplift so desirable whereby we may make effective efforts previously unsuccessful, has impressed me with the importance of securing greater elasticity of the tissues and promptitude in the reaction-times between controlling centers and outlying motor parts. This constitutes a key to vascular competence by enhancing vasomotor reflexes throughout the whole system. The grosser mechanisms often need even more attention than is afforded by customary methods of organic regulation, because without first achieving elasticity therapeutic results are not so readily secured. Full organic competence is not sustainable unless the supporting structures are maintained

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in normal degrees of mobility. The lungs, heart, blood-vessels, for instance, cannot do their perfect work in a contractured thorax. The abdominal viscera are unable to perform their full duties unless their supporting structures are adequately strong and elastic to exercise normal counterpressure. The hollow viscera both above and below the diaphragm need to be held poised in their normal interrelationships, so that vital hydraulics, connecting tubes large and small, may suffer no interference from undue compressions. Poisons, endogenous and exogenous, work greater harm unless local stasis is relieved. No amount of other salutary agencies can accomplish much if the normal stimuli to circulation lack something of necessary impulses and responses. The most powerful drugs can do little for ultimate restoration of capacity if the great oxygenating laboratories, the muscles, cease to play their essential co-operative part.

The benefits which we know to follow physical activities are explainable upon this same principle of responsiveness to reflex motor stimulation through vasomotor subcenters. For those who are unwilling, unable, or organically unfit to avail themselves of open-air sports and muscular activities, as much or even more can be accomplished by brief, but exact education in the cycle of normal motor impulses and responses, along with correction of local rigidities in the skeletal structures, direct or collateral. There is needed a precise estimation of what is amiss in the particular person, by whatever means the individual taste, opportunities, or organic competence makes practicable, and a correction, in so far as is feasible, of the observed shortcomings. By securing greater elasticity of the less-used structures we can accomplish improvements in many unexpected directions, among the chief of which is securing harmonious interreactions through systematic motor stimulations. The body is dependent upon wholesome motor stimulations for the maintenance of diverse nutritive processes.

VII.

Normality of posture is essential to organic competence. Erectness is compounded of vertical and horizontal lines from which divers other lines depend. While curving lines make for grace, they tend to impair the power of support. The weaker the person, the greater are the curves exhibited. Much bodily weakness is conditional upon that exaggeration of dependent lines which evidences incompetence in the supporting structures. These supporting structures may be at fault at both origin and periphery. For example, the visceroptoses arise in central defects which usually can and should be radically corrected by enhancing the vital index through attention to the inherent fountains of force.

A secondary cause is loss of integrity in those agencies exercising support which is supplied by collateral and external structures. Where these are voluntary muscles their vigor must be enhanced by all means, among the most definite of which is suitable use by exercise.

The key to erectness, hence to skeletal efficiency, hence to visceral interrelationships, hence to an important factor in organic competence, lies in the

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maintenance of a normal posture of the thorax. This assumes the maintenance of a *relatively* straight backbone and horizontal position of the ribs. When the ribs remain *relatively* horizontal and are easily held well up to their normal levels, there is afforded adequate support to the diaphragm, the external and internal abdominal muscles, and to all those structures combining to afford visceral support. There results therefrom a surprising degree of improvement in organic competence. To secure this thoracic normality requires intelligent motor education.

Some backbones are too straight; if so, they are abnormal; often the vertebræ are fused together, rigid, unwieldy. The ribs in such subjects are usually flattened, collapsed.

The training of the body of the child in accurate, purposeful movements should be applied to all, not merely to a selected group. Specialization by picked athletes is altogether wrong, because those who need most thus get the least. Inferior physiques require most training. Each individual should be educated not so much in the line of his proficiency as in that of his deficiency. The object of training is not overspecialization of the best endowed, but a well-rounded development for each and every one; not the overtraining of a few, but training of a race of men who shall achieve abounding endurance, energy, powers of resistance, and initiative.

VIII.

VENTILATION.—Under this heading we have to consider the value of air in motion, of cold as a stimulant to tissue respiration.

Facts are said to be stern realities. From facts we can learn principles of action; from enough of them can be deduced scientific laws. In estimating facts it is essential that they be judged in their entirety, with full consideration of contributory evidence and relationship to other, collateral facts; otherwise we may continue to blunder and reach only partial or erroneous conclusions.

It is natural to appreciate and extol creature comforts, warmth and shelter after cold and exposure; sunshine after clouds and rain; a full stomach after starvation; rest after struggle; uniform cosy conditions of life after raw buffetings. Nonetheless, it is a fact, abundantly verified by universal experience, that peoples and races evolved in cold, cloudy, windy countries, such as those of us whose ancestors came from northern Europe, require as an essential condition of health and sustained vigor, and hence of happiness and efficiency, to be subjected to the very reverse of the above Sybaritic conditions of ease.

First of cold: While it is true that exposure to intense and prolonged cold can and does produce hurtful, even fatal, effects, yet cold is, in moderate degrees, of the utmost value in stimulating our organisms, and in restoring our tissues to the norm when deadly disease agencies take hold upon us. This applies, *e.g.*, in pneumonia, in many forms of infectious fevers, and especially in tuberculosis. Cold raises the vascular tension in enfeebled children, in-

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creases appetite and nutrition, assists the conservative action of fever, and contributes to restoration of the vital balance. It is known that cold is one of the most powerful aids in development, one of the most efficient agencies for the cure of disease and relief of depression.

Heat, on the contrary, especially prolonged heat above 80° F., is one of the most powerful depressants, and may turn the scale toward or itself induce fatalities.

Air in abundance, in motion, especially in the open, or directly from the open, is an essential to the maintenance of health and a powerful aid in restoring health where it has been impaired.

We have only been recently, and are not yet wholly, emancipated from the erroneous idea that night air is "charged with deadly miasmas," mysterious bogeys, or evil spirits. The fact has been demonstrated that malaria, cholera, yellow fever, and other powers of darkness are conveyed by living things, mosquitoes, insects. Typhoid fever, hitherto known as a "water-borne disease," is also conveyed by house-flies.

Winds may be disagreeable, even terrifying; yet, they are most salutary.

IX.

So, one after another, are our fears of unknown agencies of evil cleared away by facts, learned from observation, reflection, and deduction; in brief, by science.

It has been shown that tuberculization is not caused by the tubercle bacillus alone, but that there must be added the further factors of faulty hygiene and an artificial atmosphere of living. At least 30 per cent. of all school children are said[1] to exhibit demonstrable evidence of tuberculization. It is further stated that, by the fifteenth year, 75 per cent. of all children are thus affected. Some seeds of infection will perish; some will grow and lead to destruction. The evil flame must be stamped out in each. The problem is by no means easy, but the main principles are now clear. Natural immunity increases as the individual grows older, or at least to the time of maturity. Tuberculosis is a disease of early life; that is, has its beginnings, it can and should be cured, then. Conditions for growth and development must aim to strengthen immunity, to reach perfection of maturity. During the last decennial period there was a decrease of 18.7 per cent. from tuberculosis in the registration areas.[2] Most of this result is from reconstructive personal hygiene.

We are still in the thraldom of doubt over the question whether drafts of air induce colds. Architects exercise the nicest precautions, when installing systems of heating and ventilation, whereby we may heat our houses to summer temperature and supposedly keep out the demons of influenza, pneumonia, bronchitis, etc. The majority of mankind today firmly believe it is necessary to their welfare that they live, during cold weather, in a uniform temperature of 66° to 70° F.; to have just enough air coming in "to get rid

1 Phillip: Brit. Med. Jour., April 20, 1912.
2 Boston Med. and Surg. Jour., July 4, 1912.

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of the foul, used-up, vitiated air, full of CO_2 and animal emanations, effluvia," etc., by elaborate "systems of ventilation."

As a matter of verified fact, confined air, surcharged with human exhalations, does offend the nostrils and induce distress, even faintness and real harm. It can be rendered endurable, however, by being kept in motion, especially by being cooled.

In short, catching cold is a process of infection superinduced by lowering of the autoprotective powers on account of remaining quiet a long time in superheated air while overclothed and overfed. It is an interesting, rather startling fact that half-starved, half-clothed people, overexposed to cold, as on a raft at sea for hours or days, do not catch cold. Nor does the pioneer in the Arctic outlands. Nor does the sailorman in the old-fashioned "fo'castle," though the modern sailorman, living in steam-heated floating palaces, does "catch cold" and develops tuberculosis to such an extent as to create alarm lest he become extinct.

X.

Excessive light, especially sunlight, is only second to protracted exposure to heat as a destroyer of energy. A climate that is all sunshine and dryness—and windless—not only impairs somatic powers, but dethrones reason (Chas. A. Woodruff).

During the hot, protracted, semitropical summers in the United States it is to the highest degree imperative to protect infants and young children from the midday sun and for several hours; nor is it well for them to remain very long in the sun, even on cool days, during the summer. Sunglare is destructive to vital resistance; the extraspectral rays exert a baneful influence nearly equivalent to the heat.

"Biotic energy arises from the transformation of those other forms of energy, heat, light, sound, etc., which react upon the transformer, the living substance" (B. Moore, quoted by Leonard Hill).

"A sense organ is not stimulated unless there is change of rate in the transference of energy. If a weak agent is to stimulate, its application must be abrupt" (Sherrington, *ibid.*).

"It is not the wind God tempers to the shorn lamb, but the skin of the lamb to the wind. Monotony of sedentary occupations and of an overwarm, still atmosphere endured for long hours depresses vigor, induces the atrophy of disease" (Leonard Hill).

Alternations of struggle and rest, of cold and heat, of hunger and repletion, evolve vigor, stamina, efficiency.

A child long confined in the schoolroom is in a constant state of nervous tension. He considers alternative lines of purpose, of action, is excited, but passive, held to inaction; the natural outlet of energy, muscular responses, are not permitted to follow and relieve the overstrain on body, mind, and disposition. Such a child may be relieved by permitting free action once in so often or mind and body will both suffer seriously. Yet the city child

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who is well fed and irresponsible, who runs the streets freely, can and does grow to a size and strength comparable to those of a country child.

Muscular exercise affords varied and valuable fields of usefulness. It relieves the heart by emptying the veins; it replaces fat by muscle and thereby prevents the stagnation of blood and lymph in tissue which does not spontaneously expel it; it increases oxygenation of cells and tissues, and it enhances digestion and metabolism. In the brain-worker at his desk the heart is accelerated by his work; his blood-pressure is raised; but he has neither muscular activity, change of position, nor respiratory activation to help pump the fluids around; constriction of the arteries (produced by excessive toxic wastes) in the lower limbs thus invites degenerative vascular changes.

Only by free activities in the open air can we hope to maintain natural resistance (immunity). Any educational method which interferes with spontaneous movements does more harm than good. Strained attention, continued, not only fatigues, but exhausts; it produces lasting and serious damage on growth and development in both mind and body.

Cyclopedia of Current Literature

ARTERIOSCLEROSIS, TREATMENT OF.

1. The chief point to bear in mind is that a person with arteriosclerosis has a smaller working capacity than one with good elastic arteries. One must, therefore, insist that the body as a whole and the individual organs shall not be subjected to the same strain as before. If one finds that the sclerotic process involves certain organs more than others, one must particularly insist on rest for them, *e. g.*, the heart, the brain or the kidneys.

2. The question of diet is a practical one, but hard and fast rules do more harm than good. The doctrine that meat favors the development of arteriosclerosis and that the patient can be benefited by forbidding meat, is without foundation. Above all, diet should be so regulated as to avoid all digestive disturbances. Heavy meals are to be forbidden; excessive gas formation must be avoided; regularity of the bowels is absolutely essential. Any digestive disturbance, whether gastric or intestinal, is likely to force the diaphragm upward, cause irritation of the heart and increase the blood-pressure, and this must be avoided. The peculiarities of each individual case must be carefully studied in order to arrive at a suitable *régime*. All beverages which irritate the heart and blood-vessels and thus bring about marked fluctuations in blood-pressure must be excluded. The patient should be warned not to take too much fluid. About one and one-half liters—including everything in the way of fluid that is ingested—is quite enough. The more fluids one allows, the greater the strain on the arteries. By a judicious restriction of fluids one often sees an excessive blood-pressure reduced by 20 to 40 millimeters and remaining permanently low.

3. Stimulation of the peripheral circulation is best fulfilled by means of systematic hydrotherapy, which may be

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employed in a variety of ways, always avoiding such procedures as are followed by rapid changes in the blood-pressure. Carbon dioxide baths and electric baths belong to the same therapeutic category. The proper employment of these methods has a distinct effect in dilating the peripheral arteries and thereby facilitating the circulation as a whole. At the same time there is a salutary effect on the nervous system.

4. The iodides often prove very useful in angina pectoris, both by mitigating the severity of the attacks and by diminishing their frequency. They are also indispensable where there is an undoubted syphilitic element, and often give excellent results in ocular affections dependent upon arteriosclerosis of the retinal artery.

In all other cases of arteriosclerosis the iodides often do harm. Some individuals merely suffer a pronounced loss of appetite; but quite often the administration of iodides brings about rapid destruction and absorption of the thyroid gland, with the development of acute hyperthyroidism, severe cardiac irritation, and sometimes glycosuria. Later the symptoms of myxedema develop.

The theobromine compounds deserve special mention, diuretin being the most frequently employed. It has the important property of dilating the small vessels of the heart and kidneys, thus improving the nutrition of these organs. Its favorable effects in angina pectoris are striking. It acts best, of course, in the spastic form of angina, which occurs with cardiac neuroses and particularly in association with tobacco heart. So far as the coronary vessels are concerned, theobromine is a direct antidote of nicotine. The drug acts well in the genuine sclerotic form also. It is well borne, and the author knows a number of patients suffering from sclerotic angina, who have taken the remedy regularly for many years. If they discontinue its use for any length of time, they suffer relapses. One often finds a marked reduction of the blood-pressure after several weeks' administration of theobromine preparations. Carl von Noorden (Post-Graduate, May, 1913).

DIGITALIS BODIES, EMETIC ACTION OF.

The opinion has been held that the nausea and vomiting which sometimes follow therapeutic doses of the digitalis bodies are due to their direct irritant action on the gastric mucous membrane. Analysis of the literature by the authors showed that this opinion is based on deductions, and not on experimental evidence obtained with therapeutic doses. This is wholly apart from the recognized fact that massive doses of these bodies applied directly to the gastric mucous membrane do cause irritation.

All the digitalis bodies are capable of causing nausea and vomiting when moderate doses are introduced into the circulation of the cat and dog, the amount required in some instances being far less, actually, and relatively in proportion to the weight of the animal, than are those which have been used therapeutically in a single day. The nausea and vomiting in these cases are due to an action on the vomiting center in the medulla. Only traces of digitoxin or the fixed oil of digitalis are found in the galenical preparations, and they exert no appreciable effect on the stomach after the use of therapeutic doses.

We have no means at present of securing the cardiac actions of the digitalis bodies without subjecting the vomiting center to the influence of these agents at

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the same time, and there is no advantage in substituting one mode of administration, or one member of the group, for another. The employment of opium to prevent the gastrointestinal symptoms of the digitalis bodies in ordinary cases masks the appearance of toxic symptoms which should serve as a signal for the reduction of the dose. Cary Eggleston and Robert A. Hatcher (Journal of the American Medical Association, February 15, 1913).

EPILEPSY, PHOSPHORUS IN.

The author reports his experience with the administration of a solution of 1 part of phosphorus in 10 parts of oil in a series of 9 severe cases of epilepsy, of long standing. In 6 of these cases the phosphorus was administered for over a year. In 3 cases the frequency of the convulsive attacks was diminished by about two-thirds, and in 3 by 30 to 40 per cent. In 3 others there occurred a less marked improvement. The severest cases appeared to be the most benefited. Autointoxication of intestinal origin is an important factor in the induction of epileptic attacks, and this should, of course, be corrected before the phosphorus treatment is commenced. P. Leubuscher (Deutsche medizinische Wochenschrift, March 13, 1913).

GANGRENE OF THE FOOT, TREATMENT OF.

The case is reported of a man 54 years of age in whom arteriosclerosis caused lesions of one of the lower extremities, requiring removal of the toes and later amputation of the thigh. Evidences of an oncoming similar condition in the other limb being observed, and such measures as the application of heat, raising the extremity, etc., yielding no benefit, alternate hot and cold baths were tried. The leg, up to the knee, was placed alternately in two high receptacles filled, respectively, with water at 35° C. (95° F.) and water of the usual temperature. In the receptacle with warm water, the temperature of the latter was gradually raised to 55° C. (131° F.), while cold water was added in the other receptacle to keep the temperature down. For over a year such baths have been employed by the patient morning and evening. At each sitting the procedure of alternate immersion in the two receptacles is repeated 30 to 50 times. As a result of the baths the pain promptly left, the leg regained normal red color, and no tendency to gangrene has been manifested. Pain was also overcome in other cases in which the gangrenous process was too far advanced to yield. M. Borchardt (Zentralblatt für Chirurgie, March 1, 1913).

Other observers point out the fact that by having the patient alternately lower his leg and raise it to the horizontal position an effect is obtained similar to that of alternate hot and cold baths. A species of "gymnastics" of the involved vessels is executed, and the pain overcome. The alternate baths were also employed with benefit. Thus a case is reported in which baths in hot and cold water each of three minutes' duration, repeated three times, and continued daily for some weeks resulted in almost complete recovery of the feet of a soldier after gangrene from congelation appeared already to have set in. Moszkowicz and Frank (Zentralblatt für Chirurgie, April 12, 1913).

GONORRHEAL EPIDIDYMITIS.

The author performed epididymotomy in 16 consecutive cases of epididymitis, some incipient and some advanced. The technique was as follows: Preparation: Dry shaving of pubis and scrotum; one

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application of 2 per cent. alcoholic solution of iodine followed by alcohol; primary ether anesthesia. Skin incision ¾ inch in length over most prominent part of infiltrated mass, down to the dense fibrous covering of the epididymis. Puncture of the tunica vaginalis testis from the nearest wound angle with blunt needle or tenotome. The dense fibrous covering over the major or minor body is then incised in the long axis of the tumor; this is accompanied by a marked lessening of resistance. The point of a slender hemostat is thrust into the mass to enter the pus focus. The blades of the forceps are slowly opened to effect a separation of tissue without undue tearing. The pus or fluid will escape at this stage if proper entry of the infected area is made. A 1-inch length No. 3 rubber tubing is inserted into the bottom of the wound and fixed with a suture. Copious dressing and snug application of a jumbo suspensory completes the procedure, which should consume about two minutes of time.

Local anesthesia is inadvisable on account of the risk of sloughing. Occasionally, smart hemorrhage follows, breaking into the inflamed epididymis, but this quickly ceases. Pus will be found in all advanced cases and the fluid in incipient cases will always contain gonococci. The drainage-tube is left in place forty-eight hours and two subsequent dressings usually suffice.

In the author's cases, the following beneficial changes invariably took place: (1) sudden and permanent relief from pain; (2) defervescence in forty-eight hours; (3) rapid reduction in the size of the inflammatory mass; (4) early healing of the operation wound without suppuration, except in cases in which the process already had proceeded to formidable abscess formation; (5) early convalescence without relapse.

Only one case was bilateral, and in this case bilateral epididymotomy was performed in the belief that the slight scar tissue which remains after operation is less an obstruction to the passage of spermatozoa than the dense fibrous "ball" which otherwise so often remains as a permanent relic. According to Benzler, 41.7 per cent. of all bilateral cases of epididymitis result in sterility. R. M. Culler (Journal of the American Medical Association, February 8, 1913).

GONORRHEAL OPHTHALMIA; TREATMENT WITH GONOCOCCUS VACCINES.

The author observed that in gonorrheal ophthalmia the gonococci were present in the cells of the conjunctiva and the cornea in small colonies, few of them being free. So few were actually found in the many pus cells in each field examined that the natural inference was that could an immunity be established for the actual corneal and conjunctival cells below the outer layer, the disease should run a mild course without any serious complications and yield more readily to the usual external treatment. The fact that these bacteria grow best or at all satisfactory only on blood-serum cultures was also in favor of the treatment by rendering the serum of the patient a poor culture medium for their growth. The first 9 cases so dealt with showed very marked results. There was prompt reduction of the swelling of the lids and the deeper tissue of the cornea and conjunctiva seemed to be protected quite effectively against the invasion of the gonococci, as shown by cases in which there were abrasions of the cornea.

The vaccines used were stock vaccines

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of three different laboratories and purchased in the open market. Fifty million gonococci as an initial dose and one hundred million as subsequent doses did not affect even small babies in any untoward manner locally or systematically, and double this dose was used for adults, and was well borne. The cases were treated along with others in which the old treatment alone was used. Many of the latter ran a course of six to eight weeks, during which the swelling and discharge persisted for a long time.

In no case treated with vaccine was the result at all unsatisfactory. The vaccine should be supplemented by measures of local cleanliness and antisepsis. W. K. Mittendorf (Medical Record, March 8, 1913).

GOUT, TREATMENT OF.

The author reports his experience with atophan in 48 cases. Twenty-five were of acute gout in its typical form. Fifteen were of the neuroarthritic type, in which the neuritis affected principally the sciatic, tibial, and brachial nerves. Three were of chronic gout, with articular enlargements and a history of recurring acute paroxysms, but no pain at the time. In each case the administration of atophan was followed by a reduction in temperature and a lessening of the pain and swelling within a very few hours, and in practically all, by a complete subsidence of these symptoms in from twenty-four to forty-eight hours. A large majority of these patients had been treated by colchicum, the salicylates, aspirin, etc., and almost without exception they stated that the relief obtained from atophan was greater than that from the remedies previously employed.

The results in cases of neuritis were for the most part excellent, though slightly less prompt and decisive. Four patients complained of gastric disturbances which were apparently due to the atophan. Hyperchlorhydria was present in each case, and they were all of neurasthenic type. In two the former was relieved by the conjoined administration of sodium bicarbonate and magnesium. In the others the atophan had to be discontinued.

In the absence of acute or subacute symptoms the effect of atophan was apparently more or less negligible. Only one out of four cases of acute articular rheumatism seemed to find any particular relief from the drug.

In a case of rheumatoid arthritis of severe and acute type, the patient stated that atophan gave him more relief from the pain than anything that he had previously used. He has been using the remedy more or less continuously for about a year, and reports that he is more comfortable and has better use of the joints involved, although there is no appreciable difference in the nodosities. He has gained 14 pounds in weight.

In a number of cases of gouty sore throat and in the coryzas which not uncommonly develop as a result of eliminative treatment, almost uniformly good results were obtained with the drug.

Laboratory investigations of the urine showed that atophan undoubtedly increases the amount of amorphous urates and uric acid crystals, even when proteids have been entirely excluded from the diet.

The dose varies from 30 to 60 grains (2 to 4 Gm.) per day. In most cases the author prescribed one 7½-grain (0.5 Gm.) tablet after each meal and at bedtime. When the symptoms were unusually severe he gave two tablets at the same interval, or one every two or three

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hours. G. L. Kahlo (Therapeutic Gazette, December, 1912.

HEMORRHAGE, TREATMENT OF GASTROINTESTINAL.

The large percentage of cases in which serious gastrointestinal hemorrhage is preceded by the appearance of occult blood is emphasized by the author. In his cases of gastric cancer this sequence occurred in 94.5 per cent. Such occult bleeding should be dealt with as though it were a marked hemorrhage. The patient should remain in bed on a diet consisting of 3 or 4 liters (quarts) of milk, with Carlsbad water, with or without salt, until no occult blood can be detected for three or four days in succession. Where the disorder present is cancer, and visible hemorrhage takes place, the latter, though not often serious at any given time, is likely to continue for an indefinite period. If operative treatment is not possible, liquid food and eggs should constitute the chief elements of the diet.

Enlargement of the liver or spleen in conjunction with gastrointestinal hemorrhage should also suggest syphilis. If the Wassermann proves positive, excellent results from specific treatment may be obtained.

In severe gastrointestinal hemorrhage from whatever cause, the food allowance should be strictly limited to cold tea, ice-cold milk or egg-white jelly, taken regularly in very small quantities. Nutrient enemas are of little value. Normal saline solution introduced into the bowel by the drop method, however, is of great value. One liter should be given each day, and to it 15 drops of 1:1000 epinephrin solution may be added with advantage. An ice-bag may also be employed. In severe cases gelatin should be given, though its utility is doubtful. Rectal injections of calcium chloride may be given. Where palpation shows that there are clots in the stomach and these are maintaining local irritation, the organ should be washed out with ice-water.

In hemorrhage due to hemorrhoids, the author sets great store on rectal injections of pure crystallized calcium chloride. Given systematically such injections have proven so efficient in his hands that for some years he has not had occasion to recommend operation to any hemorrhoid cases for bleeding alone. I. Boas (Berliner klinische Wochenschrift, April 7, 1913).

HEMORRHOIDS, INJECTION TREATMENT OF.

The injection method has been employed by the author in about 450 cases of hemorrhoids and the results have convinced him that the procedure is a valuable one, notwithstanding the condemnation of it by certain writers.

The solution he uses is:—

℞ Phenolis, 3j (4 Gm.).
Glycerini, q. s.,
Aquæ, q. s. ad 3x (40 c.c.).
M. Sig.: 10 per cent. phenol solution.

The glycerin is added drop by drop after the phenol and water are mixed, the mixture being stirred, until solution is perfect.

The patient is given a cathartic the night before the piles are to be injected. Before operation, the patient is, if necessary, allowed to sit on the commode and by straining bring down the pile or piles. If there are piles on only one side the patient is instructed to lie on that side, with his buttocks well out over the edge of the table and the knees drawn up.

A hypodermic syringe with a barrel of the smallest diameter that will allow

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it to work smoothly is all that is needed. The needle and syringe are boiled, 10 minims of the 10 per cent. solution of phenol drawn in, and the air expelled. Then with the thumb of the right hand covered with dry gauze applied near the edge of the pile, the latter is prevented from returning by pulling away from the edge of the anus—not allowing the thumb to slip over the skin. At the same time the index finger of the left hand, thoroughly lubricated with sterile petrolatum or other sterile lubricant is introduced, with the ball of the finger pressing upward so as to avoid pressure against the pile. The finger is then turned with the ulnar side toward the pile, and bent; with pressure thus applied, a pile of any size can usually be held in position for treatment. The parts are next thoroughly cleansed, usually with 1:40 phenol, and then, before injecting, the point where the needle is to be inserted is touched with a little pure phenol on the point of a probe and the action arrested by allowing a little sterile water to run over it immediately; or, the point is touched with a little tincture of iodine on the point of a probe, not using enough to spread. The point chosen for the insertion of the needle should be in the wall of a crypt of Morgagni or in a column of Morgagni, which is the lowest portion of the internal pile above the internal sphincter when the pile is replaced. If the point of introduction of the needle is in an external pile or in the anal mucosa below the internal sphincter, there will be more swelling of the portion below the grasp of the internal sphincter and more tenesmus after the operation.

After introduction, the point of the needle is carried upward beneath the pile to its upper limit where the needle can be felt by the finger beneath the mucous membrane and where it moves freely from side to side; here 2 or 3 drops of the solution are deposited. Then the needle is partly withdrawn and directed into the body of the pile, where 2 or 3 drops are deposited; the position of the needle point is again changed in the substance of the pile and 2 or 3 drops are again deposited, and so on until the 10 minims are used.

Depositing a few drops under the normal mucous membrane at the upper limit of the pile helps to prevent prolapse of the injected pile, as its result is a small elongated mass of indurated tissue fairly holding the mucous membrane in position. After injection the needle is left in position a few minutes, as this procedure seems to seal the opening so there is less apt to be bleeding. The finger that is used as a tractor should remain in position about five minutes after injection is completed, keeping pressure against the wall of the gut above the hemorrhoid and pulling downward, thus thoroughly obstructing the return circulation of the pile. The circulation of the superior hemorrhoidal veins should be controlled by lateral pressure mainly as they run upward in the wall of the gut, and that of the middle and inferior hemorrhoidal veins by both downward traction and lateral pressure.

When it is not possible to bring the pile to be injected outside and get the finger above it, it may be managed by introducing the blade of Sims's speculum or the author's modification of Sims's speculum for rectal work, and then placing a stiff probe bent U-shaped over the pile, and with this exerting lateral pressure and downward pull.

After the pile is replaced a small rod of gauze is placed over the anus and

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pressed upward; the buttocks are then strapped tightly together. The patient is next kept quiet for about fifteen minutes, after which time he may go home.

Before the time for evacuating the bowels the patient is instructed to take a 6-ounce enema of olive oil or of normal saline solution, to secure a movement with as little straining as possible. After this first movement is secured without prolapse of the treated pile there is little likelihood of its coming down again, unless it has been insufficiently treated, in which event, after inflammatory induration subsides, it may come down again in whole or part. If so, it is injected again, and still again, if need be, until connective tissue is formed in sufficient quantity in, above, and beneath the pile not only to cause gradual atrophy but to hold the remaining pile tissue above the sphincter.

If after one injection the pile does not come down, then in five to seven days a second pile is similarly treated; after another five or seven days another pile is attacked, etc. A case may require only one or two injections, or as many as ten.

Hemorrhoids should never be injected: (1) when strangulated; (2) when highly inflamed; (3) when of the thrombotic type; (4) when a painful fissure coexists; (5) when external (belonging outside the sphincter); (6) when combined external and internal, if it is impossible to replace and retain the internal portion above the sphincter.

After injection the patient is regularly told that there may be some slight discomfort or even pain, but the rule is that there is none.

The author finds a good sphincter to be a decided aid in the treatment. Strong action of the sphincter only does harm and causes pain if there be an ulcer in the anal canal or if the internal pile descends and is grasped by the sphincter.

Cases particularly suitable for the method are: (1) the markedly anemic, where there is increased hazard in operative procedures; (2) tuberculous subjects, particularly when the patient has pulmonary, laryngeal, or intestinal tuberculosis or tuberculous fistula in ano, in which cases the tubercle bacilli would frequently come in contact with the raw surfaces following operation; (3) where disease of other organs makes the administration of an anesthetic inadvisable, particularly if such subjects are of a highly nervous temperament and unsuitable for cocaine work about the rectum; (4) in bleeders.

The writer has not had over 5 per cent. of recurrences in patients who would remain under treatment and observation until pronounced cured. He estimates that about 50 per cent. of the cases seen could be safely treated and cured by the injection treatment. He prefers, however, the clamp and cautery operation if the patient is not opposed to operation and if there is no contraindication, because results cannot be better, and the treatment is shorter.

The injection method is practically free from danger when not over 10 minims of a 10 per cent. solution are used, properly distributed, at one sitting. Using this weak solution in this quantity he has had no superficial necrosis and no abscesses. Thrombosis is no more a danger with this procedure than in cutting operations. G. A. Humphreys (American Journal of Surgery, March, 1913).

HERNIA IN INFANTS, TREATMENT OF.

The writer strongly recommends the worsted truss for hernia in the newborn

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and infants a few weeks or months old, to be used until the hernia is cured (the muscles having become stronger) or until such time as the child is old enough to stand the shock of an operation. It is simple, effective, and easy for the mother to learn to put on after a few trials with the aid of her family physician. It does not irritate or chafe, is easily washed, and is not expensive. It may be constructed as follows:

Take eight or ten strands of a skein of white Germantown knitting wool, make a loop, place around the child's body below the navel, tighten, and bring the knot over the external ring. Cut the free end, and bring it down on the inside of the thigh near the perineum and back up over the gluteal fold; then tie the cut free end to the band of worsted already around the pelvis. W. B. Jennings (New York Medical Journal, February 15, 1913.

HYDROCHLORIC ACID SECRETION OF STOMACH, INFLUENCE OF SODIUM CHLORIDE ON.

The writer has almost invariably found that on a diet as nearly salt-free as possible without special preparation of foods before they reach the cook, hyperchlorhydria abates. But it is not sufficient merely to interdict salt as a relish on the table. It must not be used in preparing the patient's food and he must not eat salty meats, salt butter, etc. With a diet free of salt, except for the natural content of ordinary insipid foods, hyperchlorhydria does abate in the majority of instances, although it tends to return if an ordinary salt-rich diet is taken, and there are instances in which either the patient does not tell the truth about his diet or in which there is so much hyperexcitability of the oxyntic cells that they produce an excess of HCl with the comparatively small amounts present in the body and appropriated from ordinary foods.

With hypochlorhydria, the case is different. There is no more reason to expect a cure of hypochlorhydria from administering salt than of Addison's disease from administering epinephrin, or of leanness from administering fat. In many cases of hypochlorhydria, a definite atrophy of the gastric tubules exists. In others, there is a general failure of glandular functional capacity or a failure of innervation. The presence of an abundance of available raw material cannot, of course, insure its utilization. But just as there are cases of anemia in which the blood will recuperate its hemoglobin if iron is furnished, and cases of leanness in which the mere increase of fat or of food in general will afford relief, so there are occasional cases of hypochlorhydria in which the moderate, rational increase of salt, along with other appropriate dietetic and hygienic measures, will facilitate the re-establishment of an adequate HCl secretion. A. L. Benedict (Medical Record, January 25, 1913).

INVERSION OF UTERUS, TREATMENT OF.

A statistical study of 374 cases of puerperal uterine inversion showed that the ultimate result of treatment was much the best in cases where recovery of the patient from shock was first allowed, before an attempt was made to reduce the protruding organ. Where the reduction was practised within a period ranging from one to twenty-four hours after the inversion none of the patients died and in only 14 per cent. of the cases did the reduction fail, while in cases where reduction was attempted either before or after this period there were

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both a larger number of failures of reduction and a considerable mortality.

To arrest hemorrhage, however, is an immediate indication. This may be effected by placing an elastic band around the base of the uterus in the vagina just sufficiently tightly to check the flow of blood, but no more. The band should be taken off when the desired result is secured. Where there is an incomplete inversion, a tampon should be placed in the vagina and, perhaps also, the vulva sutured together for the time being.

Before reducing the uterus the placenta should have been detached from it, if necessary, to facilitate the return. A period of time should, however, be allowed to elapse after this, to permit the mechanical irritative effects on the organ to pass off. During the reduction, which is to be performed under general anesthesia, the patient should be in the supine position, with the pelvis elevated. The tips of the operator's fingers should be approximated, first at a point near the orifice of one of the Fallopian tubes, and upward pressure exerted, with counter-pressure from the rest of the hand, so that a gradual return of the part pressed upon results. By proceeding thus, the band of constriction at the base of the uterus can be effectually overcome, and reduction secured. W. Zangemeister (Deutsche medizinische Wochenschrift, April 17, 1913).

LARYNGEAL TUBERCULOSIS, TREATMENT OF.

The benefit to the larynx of life in unvitiated air, as well as voice rest, is emphasized by the author. Where the former is not possible, laryngeal catarrh may be relieved by the use of cleansing alkaline sprays, followed by a spray of liquid petrolatum containing menthol (10-20 grains to the ounce), chloretone, and antiseptic oils. Local cough and irritation will nearly always cease with general care and hygiene, but simple lozenges of glycerin, phenol, menthol, licorice, or lemon may be used. Those containing heroin (gr. $\frac{1}{12}$), codeine (gr. $\frac{1}{8}$-$\frac{1}{4}$), morphine (gr. $\frac{1}{40}$-$\frac{1}{12}$), or cocaine (gr. $\frac{1}{10}$) may be employed.

Where there is dysphagia, the food should be soft and well masticated. The pain of deglutition can sometimes be relieved by getting an assistant to stand behind the patient, and make firm and even pressure at the angle of each jaw at the moment of swallowing; or, Wolfenden's position may be adopted: the patient lies prone on a couch, with the face over the end, and sucks the nourishment through a glass tube from a cup on the floor. Relief to dysphagia may also be obtained by a laryngeal insufflation of 3 to 5 grains of anesthesin. If given an hour before the chief meal of the day, this may furnish twenty-four hours' comfort. It is only effective, however, when there is ulceration. Pain may also be alleviated by injections of alcohol into the superior laryngeal nerve. Sprays of cocaine (2 per cent.) and insufflations of morphine (gr. $\frac{1}{16}$-$\frac{1}{4}$ with gr. ij of starch) should be reserved for hopeless cases.

Dyspnea from stenosis will frequently subside with strict local and general rest. When stridor becomes marked, interfering with sleep, rest, or circulation, a median tracheotomy should be carried out, under local anesthesia.

The galvanocautery has been shown to be a valuable method of cure in many expert hands, when employed in select cases in which the larynx and general condition warrant local interference. The electrode, brought to a white heat, is thrust into the diseased area in several points, under cocaine anesthesia.

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Several sittings at intervals of two to four weeks may be required, and a cure may occupy anything from three to twenty months. Curetting is also a local measure suitable for removing broken-down granulations or fungating areas.

Pregnancy generally contraindicates active local treatment, but tracheotomy may be necessary. The induction of abortion or premature labor is not warranted, as the disease advances just as rapidly when the uterus is emptied. Pregnancy is to be avoided in cases of laryngeal tuberculosis, and nursing should be forbidden.

Treatment with tuberculin has not, in the author's experience, fulfilled the high hopes entertained of it. A few cases are improved by it, in other cases the treatment has to be discontinued, and in the larger number of cases the effect is *nil*. St. Clair Thomson (Practitioner, January, 1913).

LEG ULCERS, TREATMENT OF.

In the treatment of chronic leg ulcers, the author advises that one bear in mind the fact that wounds tend to heal best when kept sterilized and dry. He applies 90 per cent. alcohol to the ulcer, soaking sterile gauze in it and then carefully washing the whole surface of the lesion, taking special care to clean the margins thoroughly. The entire surface of the skin on the leg, around the region of the ulcer, is also washed. The patient complains a little of the burning sensation for a while, but this does not last long. The alcohol does four things: (1) It sterilizes the surface of the ulcer and skin; (2) it stimulates the tissues, and starts them growing; (3) it absorbs water from the tissues, and helps make the surface dry; (4) it prepares the surface of the ulcer for the ointment used, which is as follows:—

℞ Acidi borici, ℥ij.
Adipis lanæ,
Petrolati, of each, ℥ij.
M. et ft. unguentum.

This ointment is spread liberally over a piece of sterile gauze and placed over the ulcer, and a firm bandage applied, extending from the foot to the knee. This is left for twenty-four hours, at the end of which time the bandage and dressing are found soaked with serum and some blood. The wool-fat, having an affinity for water, draws fluids from the tissues. The dressing is removed and the ulcer washed again with alcohol, the whole leg given a massage with alcohol and a stiff scrubbing brush. The ointment is again applied, and remains twenty-four hours, as before. After a few days, the base and edges of the ulcer will become soft, so that all the old *débris* of coagulated serum and dead cells can be scraped off with a small knife or picked off with small forceps, so that a clean, granulating surface is obtained. It is also important to cleanse the edges of the skin around the margins of the ulcer. The wool-fat ointment is used for two or three weeks, and then a more stimulating ointment —5 to 10 per cent. thymol iodide, made up with cold cream as a base—is used. The same treatment with the alcohol is continued, and the new ointment applied on gauze dressing, after washing the ulcer. Some times the granulations form faster than the epithelium, in which case they are cauterized with a pencil of silver nitrate.

For syphilitic ulcers potassium iodide is, of course, given. In all cases the bowels should be kept free with a laxative pill. B. N. Wade (New York Medical Journal, February 1, 1913).

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LYMPHOCYTOSIS OF INFECTION.

Wound sepsis, and widespread streptococcic adenitis of tonsillar origin may be accompanied by a lymphocytosis so pronounced as to suggest lymphoid leukemia. No reason is known for this substitution of lymphocytosis for the usual polynuclear leukocytosis of infection. The distinction between such a lymphocytosis (accompanying a widespread adenitis) and leukemia depends upon the recognition of an infectious origin for the adenitis, upon the lesser degree of lymphocytosis in the infectious type, and upon the course of the disease. R. C. Cabot (American Journal of the Medical Sciences, March, 1913).

MEATOTOMY.

After a thorough cleansing of the penis, a few crystals or a tablet of cocaine is deposited within the meatus and allowed to remain five minutes, a rubber band being wrapped around so as to prevent hemorrhage. A straight, blunt-pointed bistoury is used to incise the meatus to the desired extent. The cut surfaces are next dried with sterile gauze and then carefully cauterized with a saturated solution of silver nitrate in concentrated phenol. The excess is wiped away; then a similar application is made with Monsell's solution. While the part is still wet with the latter, the rubber band is removed and the part watched for a few minutes to see if there is any hemorrhage. In case there is, it may be checked by again applying the Monsell's solution. No dressing or after-treatment is required. The chief point to be borne in mind is that the bleeding should be stopped before using the silver-phenol solution. Edgar G. Ballenger and Omar F. Elder (New York Medical Journal, February 1, 1913).

NEPHRITIS, CHRONIC, TREATMENT OF.

1. *Rest and Exercise.*—Only in cases of chronic nephritis with edema, is it justifiable to order a complete rest cure. In all other forms a certain amount of exercise should be allowed, even if at the start albuminuria increases somewhat. The occurrence of blood in the urine is the only thing compelling one to deny all exercise.

Overexertion is, of course, to be avoided. The physician must watch over his patient scrupulously and interfere at once when he observes signs of bodily or mental fatigue. He must also see to it that the patient takes frequent long vacations.

2. *Diet.*—Often the physician's dietary directions have considerably wider consequences than were intended, because the patient overzealously allows himself less than was directed. Or he may be forced to a dietary at which his palate rebels, and in consequence eat too little and lose weight and strength. The physician must not content himself with such general directions as he finds in textbooks of dietetics, but must convince himself by constant experiment that these are fitted to the particular needs of the individual. It is to be remembered that any considerable gain in weight is harmful to the nephritic on account of the danger of cardiac weakness, through obesity.

In the necessity of both sparing incompetent kidneys and so arranging the diet as to conserve the bodily strength, a compromise must be struck. One should limit the proteids, giving enough, however, to guarantee the maintenance of bodily strength. Patients with chronic nephritis do not do well if the proteids are reduced to the extent theoretically allowable in normal people. The author recommends allowing an average of 80

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to 100 Gm. of proteid. A third at most may be in the form of meat; this corresponds to 130 to 160 Gm. of meat weighed raw. The difference in the chemical constitution of red and white meat is not great enough to justify the total exclusion of the former. Some 40 to 50 per cent. more fish may be taken than of meat. Preserved meats, with the exception of mild ham, are to be forbidden. The greater part of the remainder of the proteid that is permitted should be taken in the forms of milk, eggs and vegetable albumins.

The amount of fat and carbohydrates to be allowed depends entirely upon the general condition of nutrition. It is a simple matter to regulate the amount of the desserts, vegetables, fruits and sweets so as to prevent the undesirable accumulation of fat or any unsought-for loss in weight. No strong spices must be used, and nephritics must be particularly cautious in regard to alcohol.

It is not necessary to insist upon the same restriction of *salt* in chronic nephritis as in acute nephritis, but patients should be directed to restrict the intake of salt in so far as it does not interfere with the palatability of their food. Prohibition of salt is only justified when there is edema. In the other forms of nephritis the restriction of salt is merely desirable because (*a*) the elimination of salt demands a great expenditure of energy in the kidney; and (*b*) the more salt taken the greater the demand for water.

3. *Water Intake.* — Patients with chronic nephritis as a rule drink too much water, and this abundant intake of fluid is almost as injurious as it is in cardiac cases. The heart must furnish a great amount of energy to supply the necessary pressure to bring about the elimination of water. A wise restriction of the fluid intake is one of the most certain methods of lowering the blood-pressure; and the strength of the heart improves considerably as soon as the water is restricted.

The restriction of water is particularly important in the cases of vascular contracted kidney, the most common form. The kidney eliminates the solid constituents in a satisfactory manner if one limits the total amount of fluid taken in 24 hours to 1¼ to 1½ liters. It is well to have one "drink day" in each week on which the amount of fluids is raised to 2½ liters.

If, on the other hand, one is dealing with a case of marked so-called secondary contracted kidney (a much less frequent and more dangerous form), one must allow a larger amount of fluid, that is, about two liters, in 24 hours. Simple, pure spring water or fruit juice is the best drink for these patients, though occasionally it is well to allow patients special drink cures with mineral waters freely alkaline, but poor in chlorides.

4. *Stimulation of Other Secretions.* —This is not a matter of great importance in chronic nephritis. The most important measure is climatic therapy. A warm dry climate is in general to be preferred. One must avoid, however, sending patients with weakened hearts to hot climates.

5. *Care of the Heart.*—On the condition of the heart depends the fate of the patient, particularly in the vascular type of contracted kidney. Of prophylactic value are : (*a*) limitations of fluid intake; (*b*) avoidance of physical or mental overexertion; (*c*) avoidance of abuse of alcohol, tobacco, coffee and tea; (*d*) prophylaxis and careful treatment of the attacks of bronchitis to which such patients are especially liable; it is such

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attacks which often make the recommendation necessary to seek a better climate during the cold seasons; (*e*) proper measures against any tendency to obesity; (*f*) avoidance of considerable altitudes; (*g*) carefully prescribed gymnastics for the heart—graduated climbing exercises and medico-gymnastics; (*h*) stimulation of the peripheral circulation by baths and massage. Cold-water treatments, if carried out with care and under expert direction, are better borne than hot baths. This is especially true of the vascular contracted kidney. Lukewarm baths followed by cold douches and vigorous rubbing are the best form for hydrotherapeutic treatment at home. These may be used in rotation with alternating current electrical baths, or with carbon dioxide baths—the latter restricted to places where natural carbonated springs are found. The baths are much too stimulating to allow of a patient's carrying on his professional business at the same time. The more threatening or pronounced the signs of cardiac weakness the more stress is to be laid upon carbon dioxide baths; but one should not send patients with very high blood-pressure to these baths.

In well-compensated interstitial nephritis no *drugs* are needed. But it is not unwise to let the patient take from time to time small doses of diuretin or other theobromine preparations. Fifty centigrams three times a day suffice. The author often recommends to patients that they take such a course of diuretin every third or fourth month, the course to last the whole month. This is especially useful in cases where there are signs of coronary and myocardial affection.

The author warns against the use of iodine preparations. In chronic kidney disease iodine is very poorly eliminated —much less easily than chlorine. The vaunted effect of iodine upon the vessels is so uncertain that one is not justified in putting the kidneys doubtless in danger.

In later stages of the disease the stronger heart remedies will be indicated, *e.g.*, digitalis, strophanthus, sparteine, caffeine, as well as nitroglycerin and camphor, and under certain circumstances even the narcotics. Carl von Noorden (Post-Graduate, January, 1913).

OPHTHALMIC AND AURAL WORK, SCARLET RED IN.

The first eye cases which the author submitted to treatment with scarlet red were cases of corneal abrasions of traumatic origin. The application of a scarlet red ointment was found to be serviceable, healing quickly taking place. In uncomplicated cases, in which the damage has not been excessive, one application of the ointment will probably suffice, and in twenty-four to forty-eight hours the cornea should be healed.

When the patient delays going to a medical man until some days after the injury, a sloughing condition is frequently present, and there may be actual ulceration. The scarlet red ointment here again may be prescribed with benefit. In other eye injuries, such as wounds of the cornea, burns of the cornea, abrasions and wounds of the conjunctiva, etc., the medicament is also indicated.

In corneal ulcers due to disease it may advantageously be prescribed and the author has seen some cases of this nature, which had resisted the usual remedies, heal after scarlet red ointment had been applied.

In a case of widespread rodent ulcer, in the radical removal of which there was great loss of skin tissue, a large granulating surface was left, and the application of scarlet red ointment undoubtedly as-

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sisted the process of healing, and thus materially lessened the area uncovered by skin.

In granulating postaural wounds in acute mastoid disease, a scarlet red dressing has afforded good results. The ointment spread on gauze or lint is placed over the edges of the wound.

The ointment used in eye cases is one per cent. scarlet red in petrolatum or petrolatum and lanolin, equal parts. It is freshly prepared for each case. A minute portion is placed on the conjunctival surface of the everted lower lid; then a pad is applied to the eye and secured with a bandage. This is repeated once daily or every other day. The use of atropine or other remedies must be carried out if indicated; the scarlet red is an accessory treatment. The author has noted a little irritation in a few cases, evidenced either by a little localized erythema or by slight lacrimation, but none of the patients made any complaint of pain or marked discomfort. For the dressing of granulating surfaces a stronger ointment (2 to 4 per cent.) may be used. J. Allan (Therapeutic Gazette, January, 1913).

PANCREATITIS, SUBACUTE AND CHRONIC, DIAGNOSIS AND TREATMENT OF.

The authors lay stress on the fact that many of the attacks of acute pain in the upper abdomen, which pass off in a few hours or a few days, are due to a subacute swelling of the pancreas. These cases are often set down vaguely as acute gastritis, or gastric fever, or gastric ulcer, or are allowed to go without diagnosis. In one case, however, the authors were led into the error of diagnosing pancreatitis when the real lesion proved to be an acute interstitial cholecystitis, the gall-bladder occupying an unusual position close in toward the median line.

By the method of finger-point pressure, advancing gradually from all sides toward the epigastrium as a center, one is easily able to demonstrate, in cases of pancreatitis, a more or less well defined area of tenderness in which there will be one or two points of maximum tenderness, usually exactly in the midline, from one to two inches above the umbilicus. There is rarely any superficial tenderness except in the severity of the onset. During the subsiding stage one will frequently have to go moderately deep with the finger before exciting tenderness. Another feature is the presence of tenderness in the left costoiliac space behind, in which situation one comes more or less directly upon the left half of the gland.

The radiation of pain has no regularity. Quite often the patient affirms that it has not radiated anywhere, but is fixed in the epigastrium. The degree of pain is frequently characterized by its extraordinary severity. Large and repeated doses of morphine often fail of their effect. The pain may last as short a time as a half-hour or even less, or may persist for a week or more.

As to the recurrence of these attacks, this also varies widely. One patient had slight attacks of pain nearly every day for seven months, and then developed an acute attack, ending in total necrosis of the pancreas and death in a few weeks. Another had mild attacks about once a month for ten years.

In 3 out of 19 verified cases the pain amounted only to chronic epigastric distress, with occasional sharper, although still mild, attacks. In all these the pancreas was found enlarged and harder than normal, either in the head or throughout the organ.

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The carbohydrates seemed more apt to cause or to aggravate the pain than the other kinds of food. In many cases, however, the attack seems to have come on while the patient was fasting.

In 5 of the 19 cases, a relapse ultimately took the form of the acute necrosing or hemorrhagic pancreatitis, ending in death.

The presence of a palpable tumor is rare, but it is frequent to find mention in the histories of an indefinite fullness or enlargement in the epigastric region.

Jaundice, in cases in which common duct stones are excluded, is of but moderate value in diagnosis. It was present only in 9 out of 19 cases, and was characteristically slight and transitory. Vomiting is present as a rule. Chill is quite frequently found. Emaciation is rarely seen. Rigidity is usually remarkable by its absence, or its slightness, except in the later stages of the more acute cases.

The most serious difficulty is found in differentiating the disease from gall-stones. When these are confined to the gall-bladder, and the symptoms are due chiefly to cholecystitis, the diagnosis is best made from the location of the tenderness on palpation. Even, on the other hand, if the stone is in the common duct, the tenderness will usually be found to extend over the midline and to the left when the pancreas is involved coincidently with a stone, and only to the right of the midline, or in the midline, when stone alone is present.

As for laboratory tests, in the subacute and mild attacks of pancreatic swelling, excretion of the ferments into the bowel is not usually interfered with to such an extent as to be recognizable. Once the pancreatic duct is blocked, however, it becomes possible, on the one hand, to demonstrate their absence in the feces, and on the other, their presence in the blood, or rather, as is usually done, in the urine. The test for the starch-splitting ferment offers the best chance of positive results. The finding of amylase in the urine in undue amount is of strong confirmatory value, while its absence by no means excludes pancreatic swelling.

Treatment.—Rest and limitation of diet are the chief indications. Usually the attack of pain subsides in a few hours or a few days, leaving a tender area in the epigastrium, which persists for several days to a couple of weeks. In appendicitis most physicians now recommend operation in order to prevent recurrence of attacks, any one of which may end in perforation and general peritonitis. In the same way, with pancreatitis, operation is indicated because the patient is seriously exposed. The operation of choice is a cholecystostomy, which can be depended upon to drain to the exterior from 6 to 16 ounces of bile a day. Cholecystenterostomy should be avoided because it not only adds danger, but also fails to do the work it is supposed to do. The reason usually given for the benefit resulting from operation is that a gall-stone has lodged at the ampulla of Vater and has dammed back the bile into the pancreatic duct. The removal of the stone and the diversion of infected bile away from the common duct for a time allow the pancreatic swelling to subside. But this hardly accounts for cases in which the biliary passages and the bile itself are apparently free of any lesion; and these form a considerable proportion of all cases.

Now there exists a true sphincter at the outlet of the common duct into the duodenum. It is not unnatural to think that there may easily occur a spasm of this sphincter of the papilla which would bring the bile coming down from the

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gall-bladder and liver under exceptionally high pressure, and this might easily result in forcing bile back into the pancreatic duct, and so set up a pancreatitis. Cholecystostomy would then reduce the pressure in the biliary passages to such an extent as to preclude the forcing of bile into the pancreatic duct. This bile-drainage should be maintained until the pancreas has returned to its normal condition, if that is to occur at all. In cases of considerable swelling and hardness of the gland, three months are none too long. In milder cases, a shorter period may suffice.

In general, the cases treated by cholecystostomy have remained well for from one to twelve years. Edward Archibald and E. J. Mullally (Canadian Medical Association Journal, February, 1913).

PELLAGRA, TREATMENT OF.

The hygiene of pellagra is similar to that of other exhausting diseases, with the exceptions that alcoholic intemperance is exceptionally harmful in this malady and that sunlight or even bright light during the spring and summer must be avoided. These sufferers fare much the best in a cool environment.

From the diet corn and its products should be excluded. The early diarrhea does not require a too limited regimen. The woody vegetables are contraindicated in its presence, but care should be exercised that they are replaced by other nourishing articles. The flesh proteins are especially well borne. Sweet milk is valuable when it agrees, but often flatulence follows its ingestion. Peptonizing the milk obviates the discomfort, but few relish milk thus treated. Fresh buttermilk, or artificially soured milk, is useful. Where there is constipation, oatmeal, tender vegetables in purée form, well-baked white potatoes, or cereals with but little sugar will aid intestinal peristalsis. The patient should be nourished to the limit of assimilation throughout.

In the drug treatment the author uses ampoules of iron arsenite solution (16 minims) and sodium cacodylate (¾ grain), hypodermic injections of the two remedies being given on alternate days for about two weeks, then every second day. After the acute symptoms seem to be controlled, two injections weekly are continued for several months. Where there is marked anemia ampoules of 2 grains of green citrate of iron are often substituted for the arsenite. Internally the author uses a combination of potassium iodide and Fowler's solution in the ratio of 1 to 3. Beginning with 5 drops in water, three times daily after meals, the dose is increased by 1 drop each day until symptoms of arsenical saturation are manifest. When there is puffiness about the eyes on arising, the drops are stopped for a day, then begun again at the minimum of 5 drops and increased as before. Eight- to 12- drop doses are thus kept up for several months.

For diarrhea the author uses bismuth, betanaphthol, and resorcin, given with milk of bismuth as a vehicle. For the sore mouth, a solution of thymol (gr. j to f℥j), with a little alcohol used as solvent, will generally prove sufficient; a 25 per cent. solution of boroglyceride is also helpful. For aphthous spots, silver nitrate (gr. xx to f℥j) is in most instances efficacious.

Skin conditions may be benefited or cured by bland ointments, such as the oxide of zinc ointment, or a 5 per cent. ointment of boric acid. For the intense burning of the hands and feet, either ice-cold compresses, applied often to the unbroken skin, or baths of hot mustard

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water afford marked relief. Two- or 3-grain doses of acetanilide are useful for neuralgia, while brisk rubbing with petrolatum to which capsicum or menthol has been added is indicated for the pseudorheumatic pains. After the erythema has subsided, leaving a rough and harsh surface, alcohol rubs at frequent intervals facilitate the disappearance of the horny layer.

Transfusion of blood from either healthy donors or healed pellagrins is still an available method in selected cases.

Hot or cold baths, simple or medicated douching, packs, moist or dry rubs, accompanied by special massage, have established their worth.

Psychotherapy has been neglected. Psychoneuroses should not be allowed to arise from discouragement. By alleviating the various intercurrent ills the physician can produce in the sufferer a much more sanguine frame of mind. G. M. Niles (New York Medical Journal, January 18, 1913).

PULMONARY TUBERCULOSIS, TREATMENT OF.

The author produces evidence distinctly in favor of the use of tuberculin in connection with sanatorium treatment. With early cases (61 in number), the 50 per cent. of cases treated without tuberculin who lost their tubercle bacilli was increased to 66.6 per cent. upon the addition of tuberculin. With the moderately advanced cases (157), the 16.8 per cent. treated without tuberculin who lost their tubercle bacilli was increased to 33.8 per cent. by the addition of tuberculin. With the very advanced cases (67) there was no difference between the tuberculin-treated and non-tuberculin-treated cases. Now and then a case of very advanced disease would lose its bacilli, but for the most part alleviation of symptoms and some prolongation of life was all that could be looked for in the way of improvement.

The addition of tuberculin to sanatorium treatment thus increases the chances of clearing the sputum of tubercle bacilli by some 16.6 per cent. in the case of patients suffering from early disease, and by some 17 per cent. in the case of patients suffering from the disease in its moderately advanced stages. This is a material gain, the significance of which is emphasized by the excellent after-history records of the patients who lost their bacilli as the result of treatment. N. D. Bardswell (Lancet, March 15, 1913).

PULMONARY TUBERCULOSIS, TREATMENT OF COUGH IN.

Nervous cough, very common in tuberculosis, occurs because of a tickling sensation in the larynx, and does not depend upon any organic cause. It may be treated by suggestion. If this is not enough, recourse must be had to swabbing the throat with a 30 per cent. solution of potassium bromide, or taking 15 grains (1 Gm.) of this salt in water.

Pharyngeal cough may be treated with the following gargle, which is to be used warm:—

℞ Betanaphtholis, gr. iij (0.2 Gm.).
Sodii boratis, ʒss (15 Gm.).
Aquæ menthæ piperitæ, ʒvij (24 c.c.).
Aquæ, q. s. ad ʒxxxv (140 c.c.).
Misce. Fiat gargarisma.

If any inflammatory condition is present, the pharynx should be swabbed with the following:—

℞ Cocainæ hydrochloridi, gr. ij (0.12 Gm.).
Resorcinolis, gr. xv (1 Gm.).
Glycerini, ʒj (30 c.c.).
Misce. Fiat collutorium.

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In the case of pharyngeal irritation, the following gargle should be used:—

℞ Sodii salicylatis, ʒvj (24 Gm.).
Antipyrinæ, ʒj (4 Gm.).
Aquæ laurocerasi,
Aquæ aurantii florum, of each ʒss (2 c.c.).
Glycerini, ʒiiss (75 c.c.).
Aquæ destillatæ, q. s. ad ʒxxxv (140 c.c.).
Misce. Fiat gargarisma.

Laryngeal cough calls for the attention of the specialist. In the mean time, applications may be made of orthoform powder, a solution of balsam of Peru, or other similar agents.

The following draught may be ordered:—

℞ Tincturæ bryoniæ, ♏x.
Tincturæ aconiti, ♏xx.
Tincturæ belladonnæ foliorum, ♏x.
Syrupi opii, ʒj.
Aquæ, ʒiv.
Misce. Fiat linctus.
Sig.: One teaspoonful every two hours.

Tracheal cough requires expectorants, *e.g.*:—

℞ Terpini hydratis,
Pulveris ipecacuanhæ et opii, of each, gr. ij.
Misce. Fiat pulvis.
Sig.: To be taken in a cachet two or three times a day.

Or,

℞ Antimonii oxidi, gr. xv-xxx (1-2 Gm.).
Tincturæ aconiti, ♏xx (1.25 c.c.).
Aquæ laurocerasi, ʒiij (12 c.c.).
Syrupi opii, ʒvj (24 c.c.).
Syrupi ipecacuanhæ, ʒiij (12 c.c.).
Aquæ, ʒiv (120 c.c.).
Misce. Fiat mistura.
Sig.: Four, five, or six tablespoonfuls to be taken in the twenty-four hours.

For *gastric cough*, 2 drops of opium tincture or ⅙ grain of codeine should be taken ten minutes before each meal. Albert Robin (Journal des praticiens, November, 1912).

QUININE, RATE OF ABSORPTION OF.

The author found that with injections of ⅛ dilutions of quinine sulphate the minimum lethal dose for monkeys was between 0.2 and 0.25 Gm. per kilo of the animal's weight. The results obtained with ⅕, ⅓ and ½ dilutions were very nearly the same as those with the ⅛ dilutions. All injections were given in the flank behind the shoulder. Such doses given by the mouth produced little effect and even doses equal to 0.4 Gm. per kilo of the body weight did not cause a severe reaction when given orally. Thus, the mode of administration giving the quickest action and the best absorption of quinine is as follows, commencing with the most efficacious: Injections of ⅛ dilutions; injections of ⅕ dilutions; injections of ⅓ dilutions; injections of ½ dilutions; oral administration with or without fasting. A. L. A. Webb (Journal of the Royal Medical Corps, March, 1913).

SCARLET FEVER, SALVARSAN IN.

Salvarsan was used by the author in 109 and neosalvarsan in 8 cases of scarlet fever. Upon the throat symptoms, especially in the necrosing form, a strikingly favorable effect was produced. The necrotic lesions began to clear up with unexpected rapidity, this probably accounting for the small number of the cases in which otitis appeared. Sequelæ such as glandular enlargements and nephritis, on the other hand, were not warded off by the remedy. The milder cases of scarlatina do not require salvarsan treatment, which is indicated, however, in the severe toxic forms. *Neo*-salvarsan is not suitable for the treatment of scarlet fever. G. Jochmann.

Another observer states that he has also witnessed good results from small doses of salvarsan in scarlet fever, even

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upon local application. Schreiber (Congress on Internal Medicine, Wiesbaden; Zentralblatt für innere Medizin, May 31, 1913).

SCIATICA, RADIOTHERAPEUTIC TREATMENT OF.

The authors begin by referring to a patient suffering from spondylosis with acute neuralgic pain along the course of the sciatic nerve, which pain had continued for seven years. When the patient presented himself, he was walking with two sticks, with bent body and rigid vertebral column. Twenty-two *séances* of X-ray treatment, each of ten minutes' duration, were given during a period of four and one-half months. The vertebral region was divided into two zones, each zone receiving during the twenty-two *séances* a dose of very penetrating rays. The pain was greatly diminished after the first few *séances;* after the eighth, the patient was able to walk without a stick and to stand upright. At the end of the treatment he was able to stand almost completely erect, the pains in the course of the sciatic nerve had disappeared, and he was able to walk without assistance a distance of a mile or more without discomfort.

In 12 other cases excellent results were obtained in all but 2. The examination of the patients was made most carefully by Babinski, and all causes of error eliminated.

The dose of irradiation given in the series of 12 cases was always small. Courses of 3 irradiations were given to each region, with intervals of a week or more. After the first series the patient was allowed to rest for three weeks. The irradiation was directed for the most part over the lumbar region. When the improvement does not set in rapidly, it may be well to irradiate the course of the nerve itself.

In conclusion, it may be said that in a case of sciatica which has resisted ordinary medical treatment, and where the galvanic current has failed, radiotherapy should always be tried, especially when the sciatica is due to a compression of the roots of the nerve. Delherm (Bulletins et Mémoires de la Société de Radiologie Médicale de Paris; Archives of the Roentgen Ray, March, 1913).

TABES DORSALIS, GASTRIC DISTURBANCES IN.

The recognition that certain gastric disturbances are really due to tabes is never difficult if one is alert to the possibility. There is no fixed unchangeable rule about the nature of these disturbances, or about their duration, or their frequency of recurrence, to make their diagnosis easy. The proof of the connection between gastric disturbances and spinal lesion must often depend upon the discovery of signs of tabes of which the patient is unaware—such as faulty reflexes and cutaneous sensibility, and changes in the spinal fluid obtained by lumbar puncture; while the demonstration that active syphilis exists by the Wassermann reaction in the blood and spinal fluid or even in the latter alone adds the last link to the chain. W. F. Cheney (American Journal of the Medical Sciences, March, 1913).

TETANY, TREATMENT OF.

From observation of a large series of cases of tetany developing or recurring during gestation or in the puerperium, the author concludes that tetany thus arising, as well as that occurring with osteomalacia or rickets, is easily accounted for through insufficiency of the

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parathyroids, this resulting, in turn, in a marked diminution in the amount of calcium in the body. In all pregnant and puerperal patients, and after gynecologic operations, the author examines first for Chvostek's sign, and, if this is present, inquires of the patient concerning paresthesias in the hands, itching, pains in the fingers in sewing or writing, and muscular weakness or stiffness. Any injury to the parathyroids through pressure or operative intervention, or any hemorrhage or loss of fluid from the body may result in tetany in patients presenting these phenomena, and where such signs are present the author therefore administers full doses of calcium chloride, in the following form:

℞ Calcii chloridi (puriss.), ʒv (20 Gm.).
Syrupi menthæ piperitæ (vel syrupi rubi idæi), ʒij (60 Gm.).
Aquæ destillatæ, ʒx (300 Gm.).—M.

The dose of pure calcium chloride given daily is carried as high as 75 to 90 grains (5 to 6 Gm.) a day in adults, and, in newborn infants, to 15 grains (1 Gm.). E. Kehrer (Archiv für Gynäkologie, vol. xcix, No. 2. 1913).

THYMOL AS A TÆNIAFUGE.

A course of thymol is recommended by the author for the expulsion of tænia. Cachets containing 0.25 Gm. (4 grains) are given in the morning on an empty stomach for some days. The worm is usually expelled on the third or fourth day, but in order to make absolutely certain the treatment is carried on until the eighth day. The procedure is simple and the patients bear the drug perfectly. Up to the present the author has treated 23 cases by this method. In all the tænia was expelled without any recurrence. During the treatment all alcohol is stopped. A. Artault (Bulletin général de thérapeutique, February 23, 1913).

VINCENT'S ANGINA, TREATMENT OF.

The treatment of Vincent's angina is very simple, but must be carried out thoroughly. The necrotic material or pseudomembrane should first be removed by swabbing the ulceration with hydrogen peroxide, full strength or diluted one-half, until the ulcer is clean. Then either a 10 per cent. solution of copper sulphate, followed by a saturated solution of potassium chlorate, or tincture of iodine, should be applied directly to the ulcer. Iodine is probably the best local agent for destroying the bacteria and at the same time promoting healing of the ulceration. The drugs recorded as used by different authors are: Silver nitrate, subacetate of copper, chromic acid, phenol, argyrol, iron and glycerin, methylene blue, zinc sulphocarbolate, and local application of salvarsan. The galvanocautery and chemical cauterizing agents have been used without much success. An astringent cleansing mouth wash is indicated. Potassium chlorate should be used either locally or internally. Most relief from the pain in swallowing will be obtained from the use of orthoform in powder or tablet form. General tonic treatment is indicated only in multiple stomatitis and in the recurrent forms.

To prevent infecting others, drinking and eating utensils should be sterilized and kept separate. Sputum and mouth discharges should be burned. Following the attack, local disease of the mouth, teeth, and tonsils should be attended to, but operative work had best be postponed until one has made sure, by the microscope, of the absence of the specific bacteria. Removal of the tartar from the teeth and oral hygiene are important preventives. C. C. Sutter (Medical Record, March 8, 1913).

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WASSERMANN TEST, CONTRADICTORY FINDINGS IN THE.

Attention is called to the great importance of the human element or personal equation in the Wassermann reaction. The results of the test depend in great measure on the absolutely perfect standardization of the reagents used; these are subject to variation in the hands of different serologists. As a result of these differences, diversity in results is not infrequent. It is a gross error to accept the findings of one serologist as conclusive, particularly if his result is positive and the diagnosis dependent on his report; his work should be checked up by one or more equally competent workers. If two or more competent serologists report on a given serum, the majority opinion may be accepted as fairly conclusive; frequent reexaminations are always of advantage to the patient. Of 37 cases studied for discrepancies, agreement of findings took place in 26 cases (70 per cent.); absolute contradiction of findings took place in 5 cases (14 per cent.); slight disagreements took place in 6 cases (16 per cent.). All mention of results of the Wassermann test, in the literature or elsewhere, should be accompanied by the name of the serologist who made the test, in order that the measure of accuracy and skill employed may be estimated. A. L. Wolbarst (New York Medical Journal, February 22, 1913).

WASSERMANN TEST, INTERPRETATION OF RESULTS OF.

Recent investigations appear to prove that the Wassermann reaction is not necessarily a true antigen-antibody reaction, but may be produced by certain lipotropic substances formed in the tissues of syphilitics during the progress of the disease. But it appears that when an antigen prepared from a syphilitic fetal liver, which is rich in spirochetes, is used, the reaction partakes of the character of both a true antigen-antibody reaction and a reaction between the lipoids contained in the antigenic extract and the lipotropic substances present in the serum tested, while, with an antigen prepared from normal tissues, the reaction is between the lipoids and lipotropic substances only.

Of 654 cases of *primary* syphilis, 580, or 89.4 per cent., gave a positive result. Thus, about 10 per cent. of primary cases do not give a positive Wassermann test. A plus-minus reaction in the primary stage, especially during the first and second week, is of some value, providing a suspicious lesion is present. It is best, however, to consider such reactions as negative and have the serum examined again in a week or two. The significance of a negative reaction during the primary stage of syphilis is practically *nil*.

Of 1434 cases presenting active *secondary* symptoms of syphilis, 1372, or 95.6 per cent., gave a positive reaction. It must be admitted that some patients presenting active symptoms of the secondary stage of syphilis do not develop a positive Wassermann reaction.

A plus-minus reaction in patients suspected of being in the secondary stage of syphilis is valueless from a diagnostic standpoint. Before making the diagnosis from it treatment should be omitted, the test should be repeated after an interval of two or three months, and, if the reaction is still a plus-minus, the diagnosis of syphilis should not be made, in the absence of other symptoms.

Of 465 patients presenting symptoms of the *tertiary* stage of syphilis, 404, or 86.8 per cent., gave a positive reaction. Practically 15 per cent. of cases of ter-

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tiary syphilis which presented symptoms at the time of making the tests thus gave a negative reaction.

Under *"latent* syphilis" were included all those cases in which no active symptoms of the disease were present at the time of making the test. Almost all the patients had received more or less specific treatment and the majority were tested in order to determine whether the disease had been cured. Of this class of cases 778 were tested, with a positive result in 509, or 65.4 per cent. In most of the patients the only evidence of the disease was glandular enlargement and in many even this symptom was absent. The great value of the Wassermann test in the diagnosis of syphilis is well shown in the high percentage of positive results in this class of cases.

A negative reaction in cases suspected of being in the latent stage of syphilis has no value unless it remains consistently negative over a period of at least a year.

It is generally admitted that in *congenital* syphilis about 90 per cent. of the cases give a double-plus reaction; in paresis nearly 100 per cent., and in tabes between 50 and 60 per cent.

The use of the reaction makes possible the intelligent administration of both salvarsan and mercury, and every patient suffering from syphilis should have the treatment controlled by Wassermann tests made at intervals of at least two months. The occurrence of the double-plus or plus reaction following treatment should always be interrupted as meaning that more treatment is necessary.

A plus-minus reaction after-treatment, provided it is obtained on repeated examinations, should also be considered as an indication for more treatment.

A negative reaction after-treatment is of no value as an evidence of cure unless it remains negative for at least a year and no symptoms have developed meanwhile.

If the diseases in which the Wassermann complement-fixation test has occasionally been found positive can be excluded, a double-plus reaction is absolutely specific. With a history of infection or the presence of clinical symptoms, a plus reaction should also be interpreted as diagnostic of syphilis.

A diagnosis of syphilis should never be made on the presence of a plus-minus reaction alone. Many normal individuals will give a plus-minus reaction at times.

A single negative reaction is of no value in excluding syphilis. Only when such a reaction is obtained on repeated examinations for at least a year after cessation of treatment can it be considered as evidence of the absence of the disease, and a luetin test should be made to corroborate the Wassermann result.

No dependence can be placed on a negative Wassermann reaction in individuals who have ingested considerable amounts of alcohol within twenty-four hours of the making of the test, and therefore a careful inquiry should always be made regarding the recent use of alcohol before collecting blood for the reaction.

The serum for the Wassermann test should be collected under aseptic precautions, especially if it is to be kept for any length of time before it is tested, as certain strains of staphylococci and streptococci, when growing in normal serum, are capable of producing substances in the serum that may give rise to a positive result. C. F. Craig (Jour. Amer. Med. Assoc., February 22, 1913).

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Clinical Summary

Practical hints from articles and abstracts that have appeared in the Monthly Cyclopedia and Medical Bulletin during the current year.

Acne. TREATMENT. 1. Following lotion advised: Zinci sulphatis, potassæ sulphuratæ, sulphuris præcipitati, of each ʒj; aquæ, ʒiv; to be applied at night. 2. To keep open orifices of follicles, resorcinol in 10 to 15 per cent. paste, recommended. 3. If skin thick, sluggish and oily: Preliminary washing with tincture of green soap. 4. Warm water may be used after incising pustules, to favor bleeding, but for washing cold water is preferable. 5. X-rays of service (*a*) to increase local blood-supply and improve resistance; (*b*) to cause atrophy of sebaceous glands. 6. High-frequency current useful to reduce induration of nodular acne. 7. Massage or local manipulation, to facilitate drainage of ducts. 8. Dermal curet, when pustules cured and superficial epithelium somewhat macerated by resorcin. *Chipma* Page 283

Adenitis, Tuberculous. TREATMENT. 1. Produce Bier hyperemia by applying elastic band about neck for a few hours before opening abscess. 2. Make very small straight incision into gland, evacuate contents with dull spoon, using no force, and, without washing or wiping out cavity, introduce a 2 to 4 per cent. solution of formaldehyde in glycerin, and seal incision. Primary healing results in 50 per cent. of cases; others are treated by further injections. 3. In cases of extensive involvement, prescribe enzymes of yeast internally. 4. In the few cases that do not respond satisfactorily, resort to radical operation. *Brown.* 303

Albuminuria. TREATMENT. Prophylactic doses of Roux's antidiphtheritic serum in 128 cases of scarlet fever found to lower greatly frequency of albuminuria in these cases. Anaphylactic effects extremely rare with this serum. In all cases of albuminuria originating from throat inflammation, as well as in albuminuria in general where other measures have proven ineffective, the serum should be given hypodermically in doses of 10 c.c. (2½ drams) every three or four days. *Galliot.* 36

Anal Fissure. TREATMENT. Conservative measures advocated in painful fissure. In examining for it have patient bear down, or blow in some orthoform. In treatment: 1. Apply thigenol on cotton on end of probe, which is then withdrawn, leaving cotton in position. 2. Patient to drink tumblerful of hot water an hour before breakfast, and another, either hot or cold, in evening. 3. To insure softness of motions: Tincture of cochineal and peppermint oil, of each, ♏x (0.6 c.c.); syrup of glycerin, ʒj (4 c.c.); soft paraffin, ʒj (31 Gm.). If this objectionable, add 20 grains (1.3 Gm.) of powdered cocoa, or 10 to 20 grains of powdered agar. Dose of the mixture, 1 teaspoonful four times daily. 4. Where constipation previously present: Some aperient, such as confection of senna, ʒss-j (2-4 c.c.), to be given in addition. 5. After bowels act: Patient to wash parts and apply some bland ointment, *e.g.*, one of eucalyptus. 6. Where violent sphincteric spasm and pain, dilate under gas, and, if sentinel pile present, remove with forceps. *Baldwin.* 109

Anemia. TREATMENT. Administration of olive oil and glycerin, equal parts, in gradually increasing doses two hours after each meal considered a valuable measure. *Bram.* 47

Appendicitis, Acute. TREATMENT. After operation in children: 1. Give warm saline solution by rectum, 8 to 10 ounces every two or four hours; administer slowly with catheter and funnel. 2. Feed with a decoction of crushed raisins, alternated with albumin water. 3. Open bowels as soon as possible. If no normal movement within twenty-four hours, give glycerin enema; use syrup of senna as routine aperient. *Stiven.* 37

Appendicitis, Chronic. DIAGNOSIS. In cases of chronic appendicitis with digestive symptoms, induction of referred pain or distress in the epigastrium, left hypochondrium, umbilical, left inguinal, or precordial region by a continuous firm pressure over the appendix (McBurney's point) is a valuable test in deciding when and when not to recommend operation. *Aaron.* 283

Arthritis, Chronic. TREATMENT. Certain joint cases, rebellious to all other treatment, can be arrested by proper diet combined with colonic lavage. Breakfast: Cereal, small amount; toast with butter; imitation cereal coffee. Between breakfast and lunch: Buttermilk, 2 glasses; water, 1 glass. Lunch: Clear soup (or lettuce or spinach); 1 roast potato; 2 slices toast; imitation coffee. Between lunch and dnner: Buttermilk, 1 glass; water, 1 glass. Dinner: Clear soup (or twice a week small amount roast chicken, or 1 egg); toast or lettuce; imitation coffee; apple sauce. Between dinner and bedtime: Buttermilk and water. Daily simple enema followed by high colonic lavage with about 1½ quarts normal saline solution, until washings return fairly clear. Adapt diet to individual caloric needs and with constant regard to weight. *Pemberton.* 45

Arthritis, Gonorrheal. TREATMENT. A. Acute. 1. Sodium salicylate, 1 to 4 drams (4 to 6 Gm.) or acetyl salicylic acid, 20 to 30 or 40 grains (1.3 to 2.6 Gm.), freely diluted, during febrile stage. 2. Where intolerable

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pain and insomnia or threatening rupture of synovial membrane or subluxation, puncture, repeated if necessary, and active counterirritation. 3. In suppurative and grave forms, arthrotomy, either simple or followed by iodine or zinc chloride. 4. Passive movements and massage, when acute symptoms subsided. Other available measures: 5. Antigonococcic vaccines. 6. Antimeningococcic serum. 7. Autoserotherapy. 8. X-rays or radium in obstinate cases. 9. Bier's hyperemia. 10. Hot-air treatment especially; air in hot-air-box at 175° to 210° F., for one-half to one hour at a time. B. Chronic. Additional special measures: 1. Disinfection of genitourinary tract. 2. Thyroid substance, 2-grain (0.12 Gm.) cachets one to three times daily. 3. Fibrolysin injections, 30 minims (2 c.c.) daily for a fortnight, where joint deformity present. *Dardel.* Page 236

Asthma, Bronchial. TREATMENT. 1. When patient first seen during an attack, give 10 grains (0.6 Gm.) of blue mass or an equivalent amount of calomel with soda, followed by salts next morning. 2. Morphine and atropine injection, only if patient suffering intensely. 3. Sodium iodate, gr. iv-v (0.25-0.3 Gm.) every four to six hours, in capsules, given with food (contraindicated in the tuberculous, especially if hemoptysis). 4. Repeat mercurial purge if attack not markedly better in twenty-four hours. 5. Diet. During attacks: Broths every two to four hours. In intervals between attacks: Enough plain, coarse food to satisfy hunger and no more. Soups, clear of fat; fresh fish; raw oysters or clams; tender and lean meats; all vegetables except onions, cabbage, cucumbers, corn on cob; potatoes, peas, and beans only sparingly; only well-baked or toasted bread; rice, cereals, and eggs in moderation; no raw fruits; pastry, sweets, and any articles found by experience to disagree to be avoided. Careful scrutiny of patient's selection of foods required. Heaviest meal to be taken at noon; light supper. *Oettinger.* 37

Theobromine sodium salicylate (diuretin) found to do good in many cases. Often it is sufficient to give 15 to 30 grains (1 to 2 Gm.) before time of expected paroxysm. The product can be taken for weeks without harm. *Meyer and Cahn.* 179

Inhalation of 1: 1000 epinephrin solution in a special very fine spray from small atomizer advised for arrest of a paroxysm by patient at any time. In established severe attacks, following combination recommended: Epinephrin solution, 9 c.c.; atropine sulphate, 0.01 Gm.; cocaine hydrochloride, 0.025 Gm.; distilled water, 1 c.c. *Staübli.* 284

Combined injections of 0.0008 Gm. (1/80 grain) of epinephrin and 0.04 Gm. (2/3 grain) of pituitary extract in 1 c.c. (16 minims) of water used with marked success in arresting paroxysms in 300 cases. More effectual than epinephrin alone. Second injection required in only 10 instances. *Weiss.* 296

Bronchopneumonia. TREATMENT. Creosote carbonate recommended for use in bronchopneumonia and obstinate chronic bronchitis in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first three years; in fifth and sixth years, 20 drops (2 Gm.). *Hunäns.* 162

Carcinoma. TREATMENT. Silicic acid internally, 1/6 to 1/3 grain (0.01 to 0.02 Gm.) daily, advised to prevent recurrence after cancer operations. In cancer of digestive organs, however, not more than a few milligrams should be given daily. *Benedikt.* 242

Carcinoma, Esophageal. TREATMENT. Hydrogen dioxide, 1 dessertspoonful of 1 to 3 per cent. solution every hour, found to be valuable palliative measure where stenosis apparently complete. Within twenty-four hours stenosis is overcome, and later purées and even solid food can be swallowed. Subjective symptoms disappear and patients gain in weight. Measure of little use, however, in scirrhous form of cancer. *Fradiss.* 109

Carcinoma, Uterine. TREATMENT. Method described value of which depends on (1) destruction of gross mass of carcinoma in uterus by the actual cautery heated to a little less than dull cherry-red heat; (2) application of heat to pathological tissues until whole pelvis has its temperature raised to 120° F. Uterus is thrown off as charred lump and remaining shell becomes a cicatricial mass free of carcinoma. Cachexia disappears and cure is more probable than with any other method. *Percy.* 234

Cardiovascular Disease. TREATMENT. Ideal diet in presence of impaired circulation consists essentially of bread and butter, with some milk to supply fluid, and enough cheese to make up protein requirements; fruits and vegetables to be added in moderate amount. *Bishop.* 108

Reference made to cases with high blood-pressure, hypertrophied heart, without notable thickening of superficial arteries or renal changes of importance. Symptoms usually respiratory or gastric, occasionally vertigo, tinnitus, or peripheral numbness and tingling. Measures advised: 1. Rest, especially mental. 2. Reduction in quantity of food taken, especially of purin-containing articles; small evening meal. 3. Restriction of alcohol, and especially tobacco. 4. Bowels to be kept open with phenolphthalein and rhubarb, or compound licorice powder, and calomel or blue mass occasionally. 5. Nitrites, only to relieve symptoms; where nitroglycerin fails, sodium nitrite, 1/8 to 2 or 3 grains (0.007 to 0.2 Gm.), or erythrol tetranitrate, 1/2 grain (0.03 Gm.) useful. 6. Sodium iodide, two hours after meals, in water or milk. 7. Digitalis in small doses where dyspnea or even vertigo. 8. Venesection at times very useful and effective. *Riesman.* 288

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Chorea. TREATMENT. Twenty-five cases, in children of 8 to 19 years, in which abnormal movements rapidly disappeared after 3 or 4 intravenous injections of 0.2 to 0.35 Gm. of salvarsan, given weekly. Recovery regularly after three or four weeks. General condition also always greatly ameliorated. *Marie and Chatelin.* Page 38

Constipation. TREATMENT. Stubborn constipation in infants is relieved by giving 1 dram (4 c.c.) of olive oil once or twice daily. Constipation in neurasthenics is also benefited. *Bram.* 47

Diabetes Mellitus. TREATMENT. For first two weeks restrict to careful antidiabetic diet, unless sugar in urine practically disappears in less time. Then cautiously increase carbohydrates, always warning patient of danger of overeating *permissible* articles. Should sugar persist, put to bed and restrict to 1 raw egg and 2 ounces of olive oil 3 or 4 times a day. Continue free use of a mildly alkaline drinking water. If any acidosis symptoms result, decrease amount of oil and give small quantities of carbohydrates. Proper mastication an important detail in treatment. For constipation, use: Olive oil, castor oil, glycerin, of each, 160 parts; gum arabic, 18; flavoring (oil of cassia or gaultheria), 0.5. Best diabetic flour is: Unadulterated soy-bean flour, 350 parts; unground poppy seed, 30; eggs, 250; pure baking powder, 15; water, 340. *Hodgson.* 39

Cultures of lactic acid bacillus given to 13 cases in doses of 4 to 16 c.c. (1 to 4 drams) three times daily. Indican and sugar in urine both markedly reduced. Results probably due not only to removal of putrefaction, but also to partial inhibition of carbohydrate digestion by the bacilli, as indicated by experiments *in vitro*. *Horowitz.* 235

Necessity for individualization in prescription of diet emphasized. Low carbohydrate tolerance does not imply necessity of ingestion of an excess of meat. In all grave cases meats are dangerous. Vegetables are to be preferred, and those should be prescribed which, while containing a high percentage of carbohydrates, are well assimilated in the individual case. Large amounts of fats are often dangerous. *Graul.* 286

Dupuytren's Contraction. TREATMENT. Thyroid substance continuously administered in doses of 0.1 Gm. (1½ grains) found markedly beneficial in 5 cases. *Gilbert.* 173

Dysentery. TREATMENT. Measures useful in form of dysentery sometimes epidemic in institutions discussed. 1. Isolate patient and put to bed. 2. Give calomel, 1 grain (0.06 Gm.) followed in two hours by mixture of dilute sulphuric acid, ℥iij (12 c.c.); compound tincture of cardamom, ℥j (30 c.c.), in water, enough to make ℥viij (250 c.c.); ℥j every two hours during the disease. 3. Olive oil, 1 tablespoonful every two hours; no other food. 4. Boiled water at frequent intervals. 5. In the aged, debilitated or arteriosclerotic, 1 teaspoonful of brandy every three hours. *Jones.* 163

Eclampsia, Puerperal. TREATMENT. Report of 11 cases in which squeezing out of colostrum from breasts, thoroughly carried out, appeared usually beneficial. *Walcher.* 286

Edema of Extremities. TREATMENT. Where edema of legs resisted all measures, especially where incision not permitted, good results obtained from local use of hypertonic saline solutions—25 to 50 Gm. (¾ to 1½ ounces) of sodium chloride to 1 liter (quart) of distilled water. Soak gauze compresses lightly in this, wrap around legs, and cover with thick layer of absorbent cotton, held in place by bandages. Leave dressing on overnight. Equally good results in edemas due to broken compensation, Bright's disease, etc. *Pathault.* 40

Epistaxis. TREATMENT. With patient sitting in chair, stand behind him, place index fingers of both hands beneath body of lower jaw on each side, with thumbs resting behind angles, and make gentle traction upward upon head, and simultaneously extend it backward as far as patient can comfortably bear. Sets up artificial anemia in nose and head in general, causing epistaxis to cease. Desist in one or two minutes, or consciousness may be partly or wholly lost. *Ritschl.* 165

Eye Injuries. TREATMENT. Following formula used for disinfection of cornea, especially after extraction of foreign bodies: To 2¼ grains (0.15 Gm.) of stovaine, finely pulverized and dissolved in 5 drops of oil, add, after mixing, preferably on a water bath: Hydrated wool-fat, gr. lxxv (5 Gm.), and petrolatum, ℥iiss (10 Gm.). Then add gradually: Iodine, gr. ii¼ (0.15 Gm.); sodium iodide, gr. ivss (0.3 Gm.); water, ♏xxiv (1½ Gm.). *Dewaele.* 237

In simple abrasions of cornea: 1. Irrigate conjunctival sac thoroughly with normal saline or boric acid solution. 2. Drop argyrol in eye. 3. Fill conjunctival sac with a sterile medium consisting of petrolatum, ℥vj (180 Gm.); mercury bichloride, gr. j (0.06 Gm.), and sodium chloride, gr. v (0.3 Gm.). Where cornea already infected and ulcer present, sterilize area with phenol, removing excess with alcohol; or else, touch lightly with platinum probe at red heat. In wounds of cornea: 1. Cleanse eye thoroughly. 2. Cut off any projecting iris. 3. Drop in atropine and argyrol. 4. Fill with sterile petrolatum. In burns of eye: 1. Fill with sterile petrolatum. 2. Move eyeball and lids frequently to prevent adhesions. Where sclera wounded: Draw conjunctiva over wound and stitch together. *White.* 240

Fetal Position. DIAGNOSIS. More general use of abdominal examination for diagnosis of fetal position and presentation urged, being safer and generally more satisfactory than

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vaginal and combined methods. Even in very fleshy patients and in polyhydramnios, pressure on opposite sides of abdomen with one hand, while palpating with other, will often enable one to feel distinctly the fetal parts. *Phillips.* Page 287

Fibroid Phthisis. TREATMENT. Where profuse expectoration of pus, creosote often best remedy. Dose, 3 to 5 drops (0.18 to 0.3 c.c.) three times daily, given over a long period. Creosote carbonate more easily tolerated; dose, 15 to 25 drops (0.9 to 1.5 c.c.) per day. *Fishberg.* 180

Filariasis. TREATMENT. Case of pronounced elephantiasis of lower extremities in which two intravenous injections of 0.6 Gm. of salvarsan caused disappearance of filariæ from blood and great reduction in size of limbs, weight falling from 400 to 244 lbs. *Barnes.* 1

Fracture of Forearm. TREATMENT. To correct overriding of fragments, attach to hand, anteriorly and posteriorly, as separate straps, zinc oxide adhesive plasters 2½ inches in width, reading from above wrist to 6 inches beyond extended fingers, and fixed above wrist and about knuckles with encircling strips. Apply usual splint dressing and also a plaster-of-Paris encasing bandage, including hand and lower arm. When this firm, include beneath enveloped forearm, by more turns of plaster bandage, a light, flat wooden splint projecting 1 or 2 inches beyond extended fingers. To a cross-piece at end of this, projecting an inch, attach the double adhesive strap from hand with tacks, thus keeping bony fragments from overriding. *Miel.* 165

Fracture of Hip, Intracapsular. TREATMENT. Longitudinal traction alone often unsatisfactory in results. Longitudinal combined with lateral traction, however, or wide abduction in plaster of Paris, usually gives serviceable limb. Former far easier to apply and the more suitable the older the patient. Plaster-cast method requires much skill in application, and is better adapted to young patients. *Davis.* 41

Gastric Ulcer. TREATMENT. Best preparation of bismuth to use is the subnitrate precipitated from a boiling-hot mixture. Cleanse stomach in morning with 150 c.c. (5 ounces) of Carlsbad or Vichy water, and three-quarter to one hour later give 10 to 20 Gm. (2½ to 5 drams) of bismuth subnitrate suspended in tumblerful of warm water. Administer daily, and increase or reduce dose, or discontinue, more or less rapidly, according to clinical course (Fleiner). Another method is to give same doses of bismuth finely suspended in oil, several times daily. Stepp recommends following bismuth suspension: Bismuthi subnitratis, gr. xlv (3 Gm.); chloroformi, ♏xv (1 c.c.); aquæ destillatæ, 5 fluidounces (150 c.c.); 1 to 2 tablespoonfuls to be taken hourly for several weeks. *Aaron.* 42

1. Absolute rest in bed. 2. No food for five to seven days. 3. Morphine hypodermically, until hemorrhage has ceased. 4. Ice-pack on abdomen, or hot applications in absense of hemorrhage. 5. Move bowels by enema, if necessary; where no hemorrhage, give citrate of magnesia or Carlsbad salts. 6. Bismuth subnitrate in 30-grain (2 Gm.) doses, with magnesium hydrogen dioxide (25 per cent.) in 7½-grain (0.5 Gm.) doses three times daily. Give boiled water if necessary to insure retention of these drugs. 7. Rectal alimentation, giving 500 c.c. (1 pint) of 10 per cent. dextrose solution at body temperature every six hours, by Murphy drop method. 8. Return to mouth feeding as soon as possible, according patient's condition, beginning with small doses of albumin water several times daily. *Gompertz.* 139

Gastrointestinal Disturbance, Infantile. TREATMENT. Where constipation present, with retention of toxic food derivatives and symptoms such as high fever, tympanites, stupor, etc., give a 2-grain (0.12 Gm.) dose of calomel in candy form, followed in an hour or two by large dose of castor oil with ¼ its volume of equal parts of aromatic syrup of rhubarb and port wine. Keep child quiet on back. If doubt whether cathartic can work in time, give hot colon flushes to start intestinal action, or in obstinate cases, following enema: Epsom salt, glycerin, of each, 8 ounces; turpentine, 1 dram, and water, to 2 quarts, given at 110° F.

Subsequent treatment: Diet of toast water or good beef broth alone until temperature nearly normal. Calomel, 1 grain divided, followed by the castor-oil compound, every day and later on alternate days till stools normal. After this, equal parts of aromatic fluidextract of cascara sagrada and glycerin. *Freeburg.* 292

Headache. TREATMENT. Migraine and other forms of severe headache relieved by causing copious flow of nasal secretions, thus removing congestion of dura and pia. Formulæ used: I. Mentholis, gr. viiss (0.5 Gm.); acidi borici, gr. xv (1 Gm.); iridis florentinæ, saccari lactis, of each, 3ss (2 Gm.). II. Pulveris mayoranæ, iridis florentinæ, of each, gr. xv (1 Gm.); sacchari lactis, 3ss (2 Gm.); veratri (albi), gr. ii¼ (0.14 Gm.). *Lorand.* 237

Treatment of "indurative" variety considered. 1. Saline purge. 2. Rest in bed. 3. Affected muscles to be kept at rest. 4. Free diaphoresis at outset of attack. 5. Hot fomentations or bags *loco dolenti* for several hours. 6. Salicylates in full doses often effective in acute cases. 7. Colchicum and alkalies, if patient gouty. 8. Applications of chloral, menthol, and camphor rubbed together, locally. 9. Massage. 10. Vibration, except where arteriosclerosis. 11. Rhythmically reversed electric current. 12. In chronic cases with marked fibrosis: Potassium iodide and general tonics, or ionization with 2 per cent.

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sodium salicylate or lithium iodide solution. *Beling.* Page 291

Hemoptysis. TREATMENT. Subcutaneous injection of 40 c.c. of sterile gelatin solution recommended. Causes in twenty-four hours rise in viscosity of blood by 1.4 of original value. *Cmunt.* 110

To prevent onset of hemoptysis where sense of tightness in chest or sputum blood-streaked: 1. Absolute rest. 2. Nitroglycerin solution, ♏xv (1 c.c.), or sodium nitrite, gr. xv (1 Gm.), in ℥ij (60 c.c.) of water; ℥j (4 c.c.) every four hours for two or three days.—Where actual hemorrhage: 1. Put to bed in comfortable position. 2. Reassure patient. 3. Amyl nitrite inhalation. 4. Atropine, gr. 1/50 (0.0012 Gm.) hypodermically, to be repeated 2 or 3 times in next twenty-four hours. 5. Or, nitroglycerin, gr. 1/100 (0.0006 Gm.) hypodermically, at first every half-hour for 3 or 4 doses, later less often; followed by sodium nitrite, gr. j (0.06 Gm.) every three or four hours. 6. Where excessive nervous irritability, or cough troublesome: Morphine. 7. In abundant hemorrhages: Apply bandages to middle of arms and thighs. 8. Epinephrin hydrochloride, 5 drops of 1: 1000 solution, or suprarenal substance, 3 grains (0.18 Gm.), every three or four hours; or pituitary extract, injected subcutaneously. *Frazer.* 111

Hemorrhage. TREATMENT. In operations where bleeding from bone troublesome, cut a fragment of muscle from any convenient place in operative field and apply to bleeding bony surface or edge. Rub in if it will not adhere at first. Always efficient in arresting the bleeding. *Vaughan.* 290

Hemorrhoids. TREATMENT. Olive oil a good demulcent laxative in hemorrhoids and anal fissure. *Bram.* 47

Where not much inflammation or hemorrhage, following ointment advisable: Cerati, olei amygdalæ expressi, zinci oxidi, of each ℥iiss (10 Gm.); balsami Peruviani, gtt. iij. Piece of this of size of hazelnut to be introduced high up through anus morning and evening, and especially before stool. Where much hemorrhage, following may be used: Chrysarobini, gr. xij (0.8 Gm.); iodoformi, gr. v (0.3 Gm.); extracti belladonnæ fol., gr. x (0.6 Gm.); petrolati, ℥j (30 Gm.). Hot water or antipyrin in powder or 2 per cent. solution equally effective and less irritating. Where intense itching: Aluminis, gr. xv (1 Gm.); camphoræ, gr. xij (0.75 Gm.); adipis benzoinati, ℥j (30 Gm.). Where much moisture and also itching, 10 per cent. bismuth subsalicylate powder useful. If much congestion, use: Bismuthi subsalicylatis, zinci oxidi, of each gr. lxxv (5 Gm.); talci, ℥iij (90 Gm.). In voluminous, readily prolapsing or bleeding hemorrhoids, an injection of olive oil should be taken every evening before retiring. *Plicque.* 166

Hernia. TREATMENT. Use of a mixture of 3 parts of hyoscine and 2 of atropine advised to facilitate reduction of incarcerated hernia. Inject 1/1000 grain (0.00006 Gm.) every five to twenty minutes until desired effect obtained. Full dose for adult males is 1/100 grain (0.0006 Gm.). *Waugh.* 167

Hyperchlorhydria. TREATMENT. Where patient constipated at beginning of treatment, give suspension of magnesia and bismuth just after and again one and a half hours after meals; each dose to represent 6 grains (0.4 Gm.) of magnesium hydroxide and 22 grains (1.5 Gm.) of bismuth subnitrate. Continue for three to five days, and, if evacuations still too frequent, use instead a powder containing equal *volumes* of magnesium oxide and magnesium carbonate, with a little powdered charcoal and sometimes bismuth. Less magnesium oxide should always be prescribed than is capable of neutralizing completely all the acid present. *Tupper.* 167

Ileocolitis, Infantile. TREATMENT. In "putrefactive diarrhea" of infants, all irritating found should be avoided as, by causing increased mucous flow, it favors bacterial pullulation. Use of proteid of cows' milk, obtained by removing whey from skimmed milk with chymogen or pepsin, advisable. Break up curd into fine particles and suspend in 5 per cent. gelatin water, to be heated before administration. After four or five days to a week replace gelatin water partly by buttermilk, and skimmed-milk curds by whole-milk curds, gradually getting child on albumin-milk and finally on whole-milk mixture. *Grulee.* 168

Impetigo Contagiosa. TREATMENT. Remove all crusts, wash raw surfaces with bichloride solution, make a fresh paste by adding a few drops of mercury bichloride and ammonium chloride solution (1: 2000) to small quantity of zinc oxide, and apply to irritated places twice daily. *Hiden.* 182

Infections, Pyogenic. TREATMENT. Dilute sulphuric acid in 20- or 30- minim (1.25-2.0 c.c.) doses, diluted with 2 oz. (60 c.c.) of water, every four hours, found very useful in treatment of carbuncles, boils, and other local pyogenic infections. Rapid circumscription and granulation of affected area follows. Dressing of 1: 20 carbolized petrolatum used externally. Same measure found useful in early sepsis, inflamed lymphatics, blind boils, recurrent pimples and acne. In bronchiectasis and phthisis sputum becomes less purulent and less in amount. *Reynolds and Reynolds.* 284

Influenza. TREATMENT. Care to secure proper ventilation, alimentation, and elimination necessary. Local treatment of air passages important, to destroy causative bacillus. In the morning: 1. Cleanse nose and throat with spray of Dobell's solution or 1: 400 phenol solution at 85° to 90° F. 2. Swab with: Balsam of Peru, gr. x (0.6 Gm.); ichthyol, gr. v (0.3 Gm.); glycerin, q. s. ad f℥ij (60 c.c.). In the evening: 1. Repeat spray. 2. Have patient inhale for one-half

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hour creosote, 8 c.c. to quart of water. 3. Swab nose and throat with epinephrin solution. 4. Fifteen minutes later swab with argyrol, 10 per cent. Hydrotherapy of value in chronic cases. In severe chronic cases, sojourn in an even and sunshiny, but not tropical or subtropical, climate desirable. *Jones.* Page 111

Iritis. TREATMENT. Sinus infection considered responsible for many cases of intraocular inflammation. Following treatment used with good results in 26 cases of iritis and 5 of idiopathic retinochoroiditis: Saturate tampon, of such size as to fit snugly between middle turbinate and septum and extend from exterior portion of nose to sinus posteriorly, with aqueous argyrol solution (gr. xl-℥j) and introduce. This will drain ethmoid and other sinuses. To drain antrum, place tampons under scroll of middle turbinate and above upper part of inferior turbinate. Allow to remain twenty minutes to one hour. *Manning.* 112

Lead Poisoning. TREATMENT. Obstinate lead colic relieved and constipation overcome by giving a tumblerful of olive oil once daily. *Bram.* 47

Leprosy. TREATMENT. Salvarsan used in 5 cases. Caused clinical improvement, cases showing partial or complete resolution of nodules of tissue examined. Effect is not specific or permanent. *Wellman.* 114

Leukemia. TREATMENT. Benzol (benzene) used in 6 cases of myeloid leukemia and 1 of Hodgkin's disease with good results. Given in capsules each containing 0.5 Gm. (8 minims), with same amount of olive oil; at first, 4 capsules daily, after meals, then 2 capsules 3 times daily, later 4 times, and finally 5 times. Leucocyte count gradually lowered to normal, fever disappears, and general condition improved. Effectual where other measures, including X-rays, have failed. *Kiralyfi.* 114

Benzol in doses of 7 minims (0.5 c.c.), increased to 15 minims (1 c.c.), in capsules, after meals and at bedtime, given in 5 cases—4 myelogenous and 1 lymphoid. Results: Rapid fall in leucocytes, resulting in leucopenia in 3 cases; diminution in size of spleen; improved red cell count and hemoglobin; disappearance of lymph-nodes in lymphoid case; improved general condition. Use of drug should be controlled by frequent blood examinations. *Billings.* 293

Marasmus. TREATMENT. Large series of infants with marasmus, congenital or acquired, and premature infants, treated with marked success by external application of codliver oil. Wrap child in oil-soaked flannel from armpits to iliac crests, and cover with oiled silk. Remove flannel, wash skin with soap and water, and reapply flannel, at twelve-hour intervals. Give only water by mouth, in ample quantity. Treatment causes rise in temperature, loss of dryness and wrinkles of skin, and an increase in weight, often considerable. Feed by mouth only when temperature has been normal for a number of days and skin shows increase in fat and water content. *Gray.* 114

Measles. TREATMENT. Following measures employed in 160 cases: (1) hot bath, followed by (2) application of eucalyptus oil to whole body except hands and part of face about mouth, nose, and eyes; (3) mouth irrigated twice daily with weak alum lotion, and glycerin and borax applied to interior of mouth and gums; (4) tonsils and fauces treated with 1: 10 phenol morning and evening, using firm cotton mop on end of forceps; (5) blanket-bath given morning and evening for four successive days, followed by general oil rubbing. Treatment reduced mortality and had favorable influence on course of disease. Careful nursing and maintenance of an even air temperature of 65° F. important accessory measures. *Connolly.* 239

Nephritis, Acute. TREATMENT. Saline proctoclysis advised in acute nephritis in children. Tends to relieve edema and subjective symptoms and improve condition of urine. Normal salt solution, kept at about 110° F. by hot-water bottles surrounding graduated container, passed into rectum through soft-rubber catheter, which is inserted about 6 to 8 inches after a cleansing enema. Procedure also useful in acute infectious diseases and toxemic diseases, as well as before and after ether anesthesia. *Lowenburg.* 171

Following treatment advised: 1. Rest in bed until two weeks after red cells and kidney epithelium disappear from urine. 2. Diet: Limit or exclude proteids; give carbohydrates in large amount, especially sugar, fruit juices and fruits rich in sugar, and gruels of finely ground rice, corn, wheat, or potato starch; also give thoroughly washed butter; withhold salt. Milk to be given only after dangerous stage past. Menu then enlarged gradually, adding at first purées, boiled green vegetables, cocoa, yolk of eggs, etc., and only later white of eggs, river fish, and boiled meat. 3. Fluids: Fruit juices, weak tea (Chinese tea, grass seeds, dried strawberries, or raspberries, blackberry leaves, etc.) or simple pure water. 4. Elementary measures: Theobromine preparations; diaphoresis only where edema. Hot, dry climate acts same as sweat baths. Where other methods fail, puncture of skin. In threatening uremia, venesection and, if latter ineffective, decapsulation. *Von Noorden.* 231

Renal decapsulation practised after appearance of anuria in 2 cases of nephritis due to acute mercurial intoxication. Both cases ultimately died, but not from anuria, urinary function having been resumed. *Tissérand.* 295

Nevi. TREATMENT. Use of radium advised. Skin should first be broken over lesion, even if only by lightest electrolysis, to permit of rapid action and therefore small dosage of radium salt. Eradication without scarring. *De Courmelles.* 172

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Otitis Media. TREATMENT. Where discharge copious, syringe ear gently but thoroughly 2 or 3 times daily with saturated boric acid solution, or, better, mercury bichloride solution, 1: 8000, sometimes later 1: 4000. Where discharge scanty, first cleanse ear with cotton mop, or if acute stage of attack passed drive out discharge by Valsalva method or Politzer bag and wipe out again. Then have patient incline head and pour in bichloride solution, allow to remain ten minutes, dry ear, not very thoroughly, and plug meatus with absorbent cotton. Do this not oftener than once daily. Exceptionally, especially where there is extensive destruction of drumhead, insufflation of boric acid, or of boric acid and aristol or zinc oxide, equal parts, proves more efficacious than the mercury solution. *Theobald.* Page 116

In long-standing cases of chronic catarrhal otitis media that have resisted usual measures, cocainize parts, insert fine catheter into middle ear, and with syringe inject through it 5 to 10 minims of 10 per cent. argyrol solution. Causes inflammatory reaction and pain for forty-eight hours, but hearing is markedly improved. *Hays.* 296

Following measures advised in chronic otitis media: 1. Restricted diet, mainly of vegetables, fruit and buttermilk; prohibition of red meats and pastries. 2. Calomel, 5 or 10 grains, followed in six or eight hours by 1 ounce of castor oil, and this, in three or four hours, by ½ oz. of magnesium sulphate and 1 dram of sodium bicarbonate in 6 ozs. of carbonated water. Magnesium sulphate, 1 dram, daily before breakfast for from two to four weeks. 3. Sodium or strontium iodide, 1 to 5 grains; sodium or strontium salicylate, 5 to 10 grains, and tincture of nux vomica, well diluted, 3 times daily after meals. 4. Removal of nasopharyngeal and faucial abnormalities. 5. Alkaline wash used with nasal cup two or three times daily to keep nasopharynx clean. 6. Vibratory massage over subglenoid fossa, with gentle inflation of middle ear with vapor of chloroform, iodine or menthol, two or three times a week. 7. Where membrane relaxed and flabby: Paint posterior inferior quadrant with tincture of iodine (25 per cent.) once or twice a week, or with flexible collodion. 8. Small doses of thyroid extract. 9. Thiosinamine in cases with well-defined adhesions. *Stucky.* 297

Paralysis, General. TREATMENT. Hexamethylenamine, gr. x (0.6 Gm.) thrice daily, found effectual in preventing retention of urine and avoiding necessity for catheterization. *Baird.* 242

Pediculosis Capitis. TREATMENT. Lay patient on back on bed with head over edge, hair lying in a basin beneath head on a chair. Pour 1: 40 phenol solution over hair into basin and sluice backward and forward until hair thoroughly soaked, especially over ears and at nape of neck. Continue sluicing ten minutes, then lift hair from basin and allow to drain, without drying it. Then swathe head with thick towel or large piece of flannel and allow to remain for an hour. Finally wash hair or simply allow to dry. Method entirely safe with children of 5 years and over. Hair not damaged. *Whitfield.* 173

Pellagra. TREATMENT. Gelsemium followed by much improvement in 5 cases. Fluidextract, 3 or 4 drops every four hours, given. Discontinue drug if ptosis or diplopia occurs. *Blosser.* 174

Pneumonia, Lobar. TREATMENT. Sodium citrate internally found in most cases, especially in children, to cause fall in temperature, pulse, and respiration to normal within twenty-four hours; process in lung clears up soon after, third stage being apparently escaped. Administered in doses of 30 to 40 grains (2 to 2.6 Gm.) in adults every two hours, with a little citric acid or in lemonade. Dose for children to be calculated from 40-grain dose in adults. Drug to be continued till clearing up of process in lung complete. Active catharsis to be established at beginning of treatment. Sodium chloride should be supplied to system in about the normal daily amount (240 grains, or 16 Gm.), with the diet or otherwise. *Weaver.* 116

Administration of calcium chloride in 10-grain (0.6 Gm.) doses every four hours advised, from outset until three days after defervescence. Patients given it seem to do better than others. *Cornwall.* 175

Creosote carbonate observed to lower temperature considerably and diminish somnolence or delirium in pneumonic processes in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first 3 years; in fifth and sixth years, 20 drops (2 Gm.) and in seventh to tenth years, 25 to 30 drops (2.5 to 3 Gm.). Administered readily in a spoonful of warm milk. To be continued in ½ doses for a week after auscultatory signs have disappeared. *Hunäns.* 162

Use of a 20 per cent. solution of camphor in olive oil previously washed with alcohol recommended in both lobar and bronchopneumonia. Mortality seemed lowered by post-trochanteric injections of this. Dose in cases of intermediate severity, 10 c.c. (2½ drams); in grave forms 15 and even 20 c.c. (3¾ and 5 drams), ½ the amount being injected morning and evening. In children 1 c.c. (16 minims) for each year of age is given. *Certain.* 299

Poisoning by Illuminating Gas. TREATMENT. I. First stage, preceding loss of consciousness: 1. Fresh air. 2. Aromatic spirit of ammonia. 3. Effervescent sodium phosphate, to produce eructations and relieve nausea. 4. Oxygen inhalation. 5. Analgesics for headache. 6. Avoidance of violent exertion.—II. Second stage, patient unconscious, but breathing: 1. Howard artificial respiration, rhythmic compression of lower thorax, to assist breathing. 2. Oxygen, preferably

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under pressure. 3. Camphor, caffeine, digitalis, and strychnine hypodermically. 4. External heat, if indicated. 5. Massage of muscles after aërating lungs. 6. Treatment to be conducted in warm room. 7. If not prompt recovery, venesection and normal saline infusion, or use of "pulmotor."—III. Third stage, patient unconscious and not breathing: 1. Same measures as in preceding stage. 2. Blood transfusion. 3. Artificial respiration by Schäfer method, patient prone. *McCombs.* Page 44

Prurigo. TREATMENT. 1. Good hygiene. 2. Generous diet. 3. Codliver oil. 4. To control itching: Baths with starch, sulphurated potash, or creolin; tar, pure or mixed with olive or codliver oil; codliver oil ointment, with betanaphthol or phenol added. 5. To dissipate any coexisting eruption: Sulphur, in soap, solution of potassium sulphide, or thermal waters; codliver oil, covered with bandage and impermeable varnish; codliver oil, 3 parts, and white wax, 1, used as pomade, with or without covering; alternate injections of phenol and pilocarpine; X-rays; thyroidin. 6. In rebellious and severe cases: Soap patient in warm bath and apply a tar preparation or Vleminckx's solution. 7. In stage of lichenification: Radium. *Morris.* 50

Psoriasis. TREATMENT. Potassium permanganate, 2 tablespoonfuls of a saturated solution added to a warm bath, recommended for acute universal psoriasis. After soaking in this for ten or fifteen minutes, patient to dry himself thoroughly and apply following lotion: Amyli, talci, of each, 40 parts; glycerini, 20 parts; acaciæ, 1 part; liq. plumbi subacetatis, 4 parts; liq. picis carbonis, 26.5 parts; aquæ, 200 parts. Tar baths, preparing by adding 1 or 2 glasses (℥viij or xvj) of an emulsion of coaltar, also excellent, though a tar salve, rubbed in after a bath, is often better. Following paste found efficient in some obstinate old patches: Acidi salicylici, 10 parts; chrysarobini, olei rusci, of each, 20 parts; saponis viridis, adipis lanæ hydrosi, of each, 25 parts. Cover with oiled silk. A lotion of 1 part of lead subacetate solution to 5 of liquor picis carbonis, diluted 3j-Oj, may be used to envelop the part, covered with oil-silk, and allowed to remain all night. *Montgomery.* 175

Pyelonephritis in Pregnancy. TREATMENT. 1. Rest in bed. 2. Elevation of affected kidney. 3. Morphine or codeine for pain. 4. Early catharsis by calomel and salines. 5. Ice-cap to loin. 6. Cream of tartar water internally. 7. Diet: Milk, skimmed if much digestive disturbance, or lactone buttermilk. 8. Hexamethylenamine, gr. v-x (0.3-0.6 Gm.) with lithium or potassium citrate, gr. x, at three- or four- hour intervals. 9. Replace last after forty-eight hours by sodium benzoate, gr. x every two hours, until patient complains of burning in kidney region, when first combination should be resumed. 10. Potassium iodide or phenyl salicylate might also be used. 11. Argyrol (25 per cent.), 3j (4 c.c.), instilled into pelvis in cases persisting more than ten days. 12. In colon bacillus infections, autogenous vaccines, 30 to 50 million once a week, have been successful. 13. Induction of labor, in persistent cases late in pregnancy. 14. Nephrotomy and drainage where definite signs of surgical kidney present. *O'Connor.* 240

Rhus Dermatitis. TREATMENT. 1. To prevent further penetration of poison: Soap and hot water bath of whole body; discard all clothing exposed to the poison. 2. To relieve itching, water as hot as can be borne. 3. Curative remedies: Ichthyol collodion, 5 per cent., painted on lesions three times daily. Magnesium sulphate in saturated solution, applied on gauze, covered with rubber tissue and bandage. Iodine tincture, diluted with 9 parts of water. Hot 2 per cent. (or weaker) potassium permanganate solution; remove stain with 1 per cent. oxalic acid solution. 4. Where pustules have formed: Hot mercuric chloride solution. *Von Adelung.* 300

Scalp Wounds. TREATMENT. Shave scalp for some distance around wound, either dry or wet with alcohol; after area dried, paint with tincture of iodine and wash off surplus with alcohol. In suturing use figure 8 sutures, not too tight. Where parts badly torn, provide free drainage; stitches not to be too close together. In all fractures of skull give 40 to 60 grains (2.6 to 4 Gm.) of hexamethylenamine daily. *Harper.* 119

Sinus Suppuration, Acute. TREATMENT. Apply 4 per cent. cocaine solution on cotton applicator, passed between end of middle turbinate and nasal wall. Follow by a cleansing alkaline solution and an oily spray containing menthol. To reduce pain and promote drainage: Hot, moist applications over whole face. Salicylic preparations, acetphenetidin, and quinine, to be used as indicated. Free catharsis. Irrigation of frontal or maxillary sinuses unnecessary unless there is trouble in antrum traceable to carious tooth. Vacuum treatment by negative air-pressure often useful. *Lemere.* 176

Syphilis. TREATMENT. Following plan advised: Intravenous salvarsan injection, immediately followed by series (12 to 15) of intramuscular mercury salicylate injections, and later by 4 to 6 intramuscular injections of small doses (0.1 to 0.2 Gm.) of salvarsan in sesame oil. After this start new series of mercury salicylate injections, to be continued at increasing intervals during first year of disease. A number of the cases thus treated appeared to be cured. *Eisenstaedt.* 53

Immediate tolerance to neosalvarsan is greater than to salvarsan, but this does not warrant use of relatively larger doses of former. Neosalvarsan to be preferred to salvarsan where latter badly borne and in cases of tabes, paresis, arteriosclerosis, car-

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diac disease, *i.e.*, in all patients in whom too marked a reaction is to be avoided and where only small doses are indicated. *Bayet.*
Page 115

Salvarsan given intravenously in doses of 0.2 to 0.4 Gm., four to six times at weekly intervals, in 14 pregnant syphilitic women. Each gave birth at term to a living child, generally of normal weight, and none showing stigmata of the disease. *Jeanselme.* 299

Tabes Dorsalis. DIAGNOSIS. Spontaneous fractures not infrequently an initial or early symptom of tabes. *Taylor.* 54

Talipes Equinovarus. TREATMENT. Immediately after birth place strip of zinc oxide adhesive plaster over sole and inner aspect of foot, over correct position of latter, and draw plaster tightly along outer aspect of leg. Place second strip over sole just posterior to base of metatarsals, extending over inner aspect of foot and ending over joint of great toe. Draw firmly, apply to outer side of leg 1 to 2½ inches above external malleolus, and wrap around leg in ascending spiral. Place further strips to cover and tighten the second tension strip, beginning on leg 2 inches above ankle and overlapping until instep reached. Renew dressing, after cleansing foot with ether and alcohol, ten days or two weeks later. Deformity will be corrected in 6 or 8 weeks. Leave foot with stiff-ankle infant-shoe, with 1 strip of adhesive on outer side of foot and leg. *Allen.* 178

Toxemia of Pregnancy. TREATMENT. Free administration of oxygen seemed useful in a number of cases, some severe. May be given either by inhalation or subcutaneously. *Shears.* 242

Tuberculosis, Articular. TREATMENT. Thyroid substance indicated in sluggish cases, especially if evidences of thyroid inactivity present. Dose should be only ⅛ to ½ grain (0.01 to 0.03 Gm.) *pro die*, and patient watched for tachycardia. *Lereboullet.* 179

Tuberculosis, Laryngeal. TREATMENT. Submucous cauterization found to heal 70 to 85 per cent. of cases. Performed with electric cautery. Easier than curettage, and there is no bleeding. Not suited, however, for superficial ulcers on posterior wall, particularly those on the cords, which do better on the old method of lactic acid applications. *Pettit.* 237

Tuberculosis, Pulmonary. DIAGNOSIS. Value of percussion in earliest stage emphasized. With patient lying on back on couch, employ light percussion on terminal phalanx of a finger firmly pressed on spot under examination. Three characteristic dull areas on either side should be sought, which may all be present and of considerable size while apex is still very fairly resonant: 1. Opposite inner part of first intercostal space (percussing anteriorly) and inner part of suprascapular fossa (posteriorly). 2. Opposite outer part of same interspace, and outer part of suprascapular fossa. 3. In upper part of lower lobe, percussing posteriorly at end of spine of scapula, and anteriorly in second interspace. *Lees.* 54

Quantitative examination of albumin in sputum easily made and useful in diagnosis in doubtful cases. Technique as follows: To 20 c.c. of sputum as free from saliva as possible add a 3 per cent. acetic acid solution slowly, while agitating, until mucin is coagulated; add 2 parts of distilled water to sputum, shake well, filter through several layers of gauze, add a few drops of acetic acid solution, filter, and test filtrate for albumin by any ordinary test. If more than a trace present make quantitative test with Esbach's tube and multiply reading by 3 to get percentage. All active cases give positive reaction. *Works.* 117

TREATMENT. 1. Inhalation of following solution: Creosoti, phenolis, spiritus chloroformi, ana 3ij (8 c.c.); tincturæ iodi, spiritus ætheris, ana 3j (4 c.c.). Two Yeo inhalers to be used on alternate days, cleansed by immersion in boiling water and careful drying. Patient to pour 6 to 8 drops of solution on felt of inhaler *every hour* during daytime, and once or twice during night if awake. Petrolatum or lanolin cold cream to be smeared over nostrils and upper lip before use of inhaler at first. 2. Period of rest in bed at beginning of treatment. 3. Treat digestive disturbances. 4. Give a sufficiency of easily digested food; malted milk, dissolved in scalded whole milk, after each meal. 5. Careful disinfection of mouth 4 times daily, after the milk; antiseptic sprays for unhealthy conditions of fauces. Forty-eight complete recoveries in 70 cases thus treated. *Lees.* 54

Hydrotherapeutic measures, to be employed in 4 successive stages or steps, described: I. Ablution, beginning with water at 90° F., gradually reduced, by 2° daily until 60° F. reached; followed by drying and, if possible, exercise in open air. II. Affusion. With patient standing in water at 105° F., water at 85°, gradually reduced to 60°, is thrown over back and chest. III. Cold rub. With patient standing in water at 105°, a sheet is wrung out in water at 80°, gradually reduced to 50°, and actively rubbed till sheet warm. IV. Drip sheet. Same as last, with sheet dripping; patient rubbed and slapped for two minutes; water at 70° then poured over shoulders, and friction applied till sheet warm; same procedure rapidly repeated over other parts of body. *Baruch.* 56

Olive oil, ½ ounce (15 c.c.) two hours after each meal, increased weekly by ½ ounce up to 3 ounces, found to cause considerable gain in weight. *Bram.* 47

Sodium cinnamate subcutaneous injections found superior to cacodylates in all varieties of cases in which a general tonic effect required. Initial dose, contents of 5 c.c. (1¼ drain) ampoule, including 0.5 Gm. (⅝ grain) of the cinnamate; this to be rapidly increased by one-half, bulk of solution, however, being

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kept the same. Injections given daily. *Laborde.* Page 118

Counterirritation with mustard sometimes found very effective in night-cough. Soft capsules containing beechwood creosote, 1 minim (0.06 c.c.), oil of sandalwood, 5 minim (0.06 c.c.); oil of sandalwood, 5 grains (0.12 Gm.), given 4 or 5 times daily, may be of decided benefit for cough. *Gordon.* 119

Importance of hyperalimentation in cases of tuberculosis in pregnancy where it is decided not to empty uterus emphasized. Use of following mixture advised to increase appetite: Lysol, 1 part; ichthyol, 10 parts, and glycerin 20 parts. Begin with 1 drop and increase by 1 drop at each dose up to 30 drops, which is maintained. Preparation dropped into half tumblerful of water and taken just before meals. *Stewart.* 175

Four to 8 capsules, each containing 4 grains (0.25 Gm.) of liver substance, *pro die* found effective in arresting or preventing return of hemoptysis. In cases with low arterial tension and asthenia, epinephrin, 5 to 10 drops of 1: 1000 solution daily for five to ten days, followed by like period of rest, or of adrenal substance, 1½ to 5 grains (0.1 to 0.3 Gm.) daily, is indicated. Bayle secures good results by administering 100 Gm. (3½ ounces) of fresh hog spleen every day. Loeper and Esmonet advise pancreatin, 2 to 4 Gm. (3ss-j) in keratin-coated capsules of 0.25 Gm. (4 grains) each, daily in first and second stage cases, and especially in patients with involvement of serous membranes; improves appetite and general condition. *Lereboullet.* 179

Sluggish, afebrile cases of tuberculosis, especially with profuse expectoration, are often greatly bnefited by creosote. *Fishberg.* 180

Tuberculosis, Surgical. TREATMENT. Use of "injectio trypsini" recommended for tuberculous abscesses of all kinds, synovial hydromata, sinuses, arthritis, etc. After an insignificant local reaction, pain, tenderness, and tubercle bacilli disappear, pus becomes more fluid and undergoes absorption, and healthy tissues proliferate. Dilute the preparation as supplied with 2 to 10 parts of sterile saline solution, inject strictly subcutaneously 1 c.c. (of pure preparation), and distribute beneath skin by gentle massage, one to three times a week. Where abscesses, puncture with trocar and inject; where sinuses, inject into surrounding tissues in several places; where ulcers, under their bases; where synovial hydromata, into the sheath, and where tuberculosis of joints, in part directly into joint, partly into surrounding tissues. Undiluted injection used in the joint cases. *Baetzner.* 301

Typhoid Fever. TREATMENT. Olive oil useful as a food in 1- to 3- ounce (30 to 90 c.c.) doses 3 times daily. Also useful as a laxative; high injections of lukewarm oil may be given. *Bram.* 47

Collective statistics as to results of use of typhoid vaccines show 423 cases, with only 5.4 per cent. deaths. Dosage used by author: Initial hypodermic injection of 500,000,000, repeated at four-day intervals as long as required, and increased by 100,000,000 each time. Stock-vaccine injections made just under skin over insertion of deltoid or over tensor vaginæ femoris. *Callison.* 57

Series of 65 cases treated without milk, on diet consisting of broths, soups, gruels, gelatin, eggs, sugar of milk and butter. Gelatin given almost ad libitum—6 ounces of 5 per cent. solution, flavored with lemon, vanilla, etc., five times daily. Mortality low, persistent diarrhea only in 4 cases, hemorrhage in 4 and perforation in none. *Johnson and Watt.* 181

Iodine, in aqueous solution or as tincture—the latter in doses of 15 to 25 drops daily in a mixture of cinchona and malaga wines or in milk—given in 44 cases. Cases with profuse diarrhea, distention or nausea appeared to improve, rapid recovery usually occurred, and mortality seemed to be lowered. *Arnozan and Carles.* 304

Ulcers. TREATMENT. Value of dry treatment of wounds, burns and ulcers emphasized. Keeping a leg ulcer exposed to air, lightly dusted with aristol and stearate of zinc, is an effective treatment. Patient should lie down, elevate leg and protect it from flies and dust with thin layer of gauze. *Pitfield.* 285

Urethritis, Gonococcal. TREATMENT. Fluidextract of aconite recommended for relief of congestion and irritation; 1 minim every one or two hours for intelligent patients and every three or four hours for unintelligent. Interval to be doubled as soon as tingling, perspiration and a feeling of relaxation appear. *Pedersen.* 305

Urticaria. TREATMENT. Epinephrin given subcutaneously in doses of 8 minims (0.5 c.c.) in 6 cases. Two doses always caused complete fading of rash and cessation of itching in ten to twenty minutes. Recurrence probable in an hour or two unless treatment continued. *Swann.* 164

Vincent's Angina. TREATMENT. In mild cases, best results from use of trichloracetic acid. Membrane first removed by hydrogen peroxide and wiping with cotton swab; ulcer then anesthetized with 10 per cent. cocaine solution, and trichloracetic acid applied a few minutes after. Usually 3 or 4 applications at 2- or 3- day intervals necessary. Tincture of iodine preferable where ulceration extensive. For pain, orthoform. Carious teeth to be cared for. General condition also to be improved. *Halstead.* 58

Vomiting of Pregnancy, Pernicious. TREATMENT. Sodium bicarbonate, 5 to 50 grains (0.3 to 3 Gm.) a day, recommended. Part of it often vomited, but some retained. Continue for a week after vomiting stopped. Bowels to be well cleared by colonic flushing. Veronal also found useful. *Lyon.* 59

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Whooping-cough. TREATMENT. Pertussis bacterin used in 40 cases. Disease not shortened, but bacterin causes, after preliminary slight aggravation, well-marked, and sometimes remarkable, symptomatic improvement in a certain proportion of cases. Best results produced at the height of the disease. Give 2 or 3 full doses—20 to 50 million bacteria each—at five-day intervals. In young infants moderate doses should be given early; they diminish severity of disease and minimize complications. *Zahorsky.* Page 48

Pertussis vaccine used in 17 cases. Best dose found to be 40 million bacteria, given in buttocks even to an infant twice a week, or in severe cases in old children, 3 times a week for one week only. If much benefit noted, intervals prolonged, and vice versa. Many cases improved after single dose. No reaction from injections, local or general. Vaccine should be used only in undoubted cases of the disease. The younger the infant, the more rapid the cure. *Scott.* 174

TREATMENT. 1. Following preparation recommended: Ichthyolis, ʒiiss (10 Gm.); glycerini, ʒss (15 Gm.); liquoris calcis, ʒiiss (10 Gm.); olei amygdalæ amaræ, gtt. iij; olei anisi vel menthæ piperitæ, gtt. x; syrupi, q. s. ad ℥iiiss (100 Gm.). Dose in children up to 1 year of age, 4 to 6 teaspoonfuls; up to 2 years, 3 to 4 dessertspoonfuls; 3 to 4 years, 4 to 5 dessertspoonfuls; 5 years and upward, 4 to 5 tablespoonfuls. These doses can be exceeded in obstinate or long-standing cases, or those complicated with capillary bronchitis or bronchopneumonia. 2. As adjuvant in young children: Instillations of weakly mentholated oil in nose. 3. Emetic and purge at beginning of treatment. 4. If bronchopulmonary complications should appear: Mustard baths and antiseptic inhalations. 5. Where hemoptysis: Inject diphtheria antitoxin and, this failing, hepatic extract. *Naamé.* 306

Wounds. TREATMENT. Treat all wounds on which great force has been exerted, and especially those contaminated by soil and dirt-covered objects, as if infected with gas bacilli. Leave open where possible and irrigate thoroughly with peroxide. Bandage lightly, if at all. Inspect frequently and irrigate often. On first sign or symptom of infection, take smear and examine for *B. aërogenes capsulatus.* Open wound freely, if sutured, and if on limb place latter in bath or irrigate continuously. If condition extensive, expose field widely to air by free incisions. (Do not employ peroxide in full strength or inject in confined spaces or directly under tissues.) *Cramp.* 42

Wounds of face and hands should be closed with subcuticular stitches, especially in women. To prevent subsequent stretching of scar, close superficial fascia with interrupted fine silk sutures before applying subcuticular stitches. After injuries to soft parts of hand, cleanse quickly by immersing in gasolene; after latter has evaporated, sterilize parts with tincture of iodine and alcohol. *Harper.* 119

Application, in gunshot wounds, of steaming towels wrung out in water as hot as can be borne, during thirty minutes night and morning before wound is dressed, recommended. To be continued till all inflammation subsides. *Griffith.* 110

Use of paste made by adding a few drops of mercury bichloride and ammonium chloride solution (1: 2000) to small quantity of zinc oxide recommended for slight wounds, abrasions, injection punctures, indolent ulcers, sores about the face, etc. Where much stinging and itching about abrasions, substitute 2 per cent. phenol for bichloride. *Hiden.* 182

Book Reviews

TEXT-BOOK OF GENERAL AND SPECIAL PATHOLOGY for Students and Practitioners. By Henry T. Brooks, M.D., Formerly Professor of Pathology at the New York Post-Graduate Medical School and Hospital, etc. Octavo of xviii + 1127 Pages, Illustrated with 525 Half-tone and Other Text Engravings (110 in Colors), also 15 Full-page Plates in Colors, Containing 40 Figures. Philadelphia: F. A. Davis Company, 1912. Cloth, $6.00, net.

This work was originally undertaken as a translation of Langerhans's "Grundriss der pathologischen Anatomie," published in 1904. The death of Professor Langerhans, however, and the rapid advances in pathologic science made since the earlier work was issued, induced the author to recast and enlarge it, and present it as an independent volume.

Somewhat over one-half of the book is devoted to general pathology, beginning with definitions, general etiology, heredity; an excellent discussion of the subject of immunity from the pen of Prof. Allen J. Smith; disturbances of the circulation and of nutrition, such as hyperemia, anemia, thrombosis, hypertrophy, atrophy, the degenerations, inflammation, etc.; malformations, tumors, etc. The consideration of tumors is particularly comprehensive, and fully illustrated. Next comes a section on "poisoning," including mention of anaphylaxis, hemolysis and the Wassermann reaction, and a discussion of the effects of salvarsan, as well as various alkaloids and metallic elements or compounds. In the succeeding chapter, on the alterations caused by animal and vegetable parasites—including bacteria—appears an ultra-conservative statement in which some uncertainty is implied as to whether the *Spirochæta pallida* is the cause of syphilis. This will doubtless be corrected in the second edition.

At page 589 begins the consideration of special pathology, in which are discussed in succession the disorders of the nervous system, vascular system, the blood and lymph, the hematopoietic organs, respiratory system, digestive canal, etc. The section on the pathology of

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the eye was revised and elaborated by Dr. E. L. Oatman, of New York, and is exceptionally comprehensive. In the chapter on the liver the recently developed subject of hemolytic jaundice is duly referred to. In the discussion of ulcers of the digestive tract, the views of Moynihan are mentioned. The relation of the parathyroids to tetany is likewise discussed.

On the whole the work is a most satisfactory one for the practitioner, who will find in it conveniently arranged the information he desires. The illustrations are numerous, and the relatively thin paper used in the work will render it convenient to handle.

A TEXTBOOK OF HUMAN PHYSIOLOGY, Including a Section on Physiologic Apparatus. By Albert P. Brubaker, A.M., M.D., Professor of Physiology and Medical Jurisprudence in the Jefferson Medical College; Formerly Professor of Physiology in the Pennsylvania College of Dental Surgery; Lecturer on Physiology and Hygiene in the Drexel Institute of Art, Science, and Industry. Fourth Edition, Revised and Enlarged. Octavo of 736 Pages, with 1 Colored Plate and 377 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1912. Cloth, $3.00, net.

This excellent work needs no laudatory mention upon the appearance of a new edition. It has justly become a popular book for students by reason of its clearly and simply written, readable text and the omission of theoretical matter not essential to comprehension of the subjects in hand. Both in the selection of facts and the mode of presentation the author has followed closely the indications dictated through an experience of many years in active teaching. The additions in the present issue include in particular, references to the investigations of Cannon on the movements of the stomach and intestines and the nerve mechanisms regulating them; the digestion and absorption of the proteins; the viscosity, specific gravity and Howell's work on the coagulation of the blood; the physiologic mechanism of the heart; the venous pulse; the auscultatory method of determining blood-pressure; the physiological action of the pituitary gland and the adrenals, etc. No references are given, but this is no disadvantage to the readers for whom the work is chiefly intended, and also finds a natural explanation in the fact that controversial matter is excluded, the text dealing largely with established facts. As in former editions, stress has been laid on those aspects of physiology that are of interest to the clinical work, notably in regard to the circulatory and nervous systems. It is plainly evident that an unusual amount of pains has been taken to make the text and illustrations as clear and as free from mechanical errors as possible, and for this reason alone the book is well worthy of special recommendation.

UBER DIE PATHOGENESE DER SALVARSANTODESFÄLLE. Von Dr. Wilhelm Wechselmann, dirigierendem Arzt der dermatologischen Abteilung im Rudolf Virchow-Krankenhaus in Berlin. Pp. 84, with 7 Illustrations. Berlin and Vienna: Urban and Schwarzenberg, 1913. Paper, $1.00 + 15c. postage.

In this valuable little work Wechselmann presents a critical and searching review of the circumstances and probable causative factors attending the deaths following the use of salvarsan up to the end of the year 1912. It is undoubtedly a fact that most of these deaths have been due to conditions at present avoidable, such as disregard of contraindications, excessive dosage under unfavorable circumstances, improper preparation of the solutions, etc. Wechselmann is able to class the deaths more directly due to the drug in several fairly distinct groups, but lays stress on the fact that the causes of demise in these cases were by no means single and simple, the intervention of several factors being probably necessary to account for the fatal termination. The chief lesson drawn by Wechselmann from his study of these cases is the necessity of carefully watching the urine after salvarsan has been administered, and in particular, where combined treatment with mercury and salvarsan is being prescribed. Simultaneous salvarsan and intensive mercurial treatment is attended with danger. If both drugs are to be used, the mercury should be cautiously given only after an interval of some days has elapsed since the administration of salvarsan, and mercury should not precede salvarsan. Wechselmann implies that energetic mercurial treatment produces some functional change in the kidneys which tends to interfere with the elimination of salvarsan, the latter thereupon being rendered more toxic though oxidation in the system and the likelihood of serious untoward effects increasing. What degree of importance is to be attached to this view future observation will show. Wechselmann's well supported thesis is, however, of interest at this time, and his book deserves a careful reading.

LANG'S GERMAN-ENGLISH DICTIONARY of Terms used in Medicine and the Allied Sciences. Second Edition, Edited and Revised by Milton K. Meyers, M.D., Neurologist to the Jewish Hospital Dispensary and to St. Agnes Hospital Dispensary, Philadelphia, etc. Octavo of 564 Pages. Philadelphia: P. Blakiston's Son & Co., 1913. Cloth, $5.00, net.

This new edition of Lang's well-known dictionary contains 4400 definitions in addition to the 45,000 previously listed. The older material has been revised and corrected. German medical terms spelled exactly like their English equivalents have been excluded. Careful comparison with other similar books and frequent reference to this dictionary have convinced the reviewer of its superior degree of utility.

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The General Field

Conducted by A. G. CRANDALL

Lots of Peace Everywhere

An era of peace and benevolence is upon us. Secretary of State Bryan is to establish peace by an international agreement to procrastinate actual hostilities until the supposedly disinterested third party can express an opinion. During that interval most of those clamorous for bloodshed will have died of old age.

Our own suffragettes, profiting by what they have observed across the Atlantic, are evidently convinced that their chances for securing the ballot are much better by adopting a bland and ingratiating attitude than by "saying things" about the men who will have considerable to say ultimately as to universal suffrage.

The appearance of various labor representatives at the tariff hearings in Washington to protest conjointly with manufacturers against certain reductions, is also gratifying evidence of better understanding between employer and employé.

Last but not least, evidently inspired by the pacific tendencies on every hand, certain rival Chinese Tongs are reported to have buried the hatchet, and from now on wars, accompanied by the frequent incidental sudden demise of some prominent member, will have become a thing of the past.

The outlook would seem to indicate a rather monotonous time for every one, were it not that there is enough left for the average citizen to grumble about, especially when he thinks about the cost of meats, the extortions of the telephone trust and other similar topics of general interest.

The Mosquito Must Move on

When the malaria-peddling mosquito gets in the way of a real estate boom, he has to go.

Dr. W. A. Evans, of Chicago, and a most excellent authority, says that the extinction of the mosquito would add $10 to the value of every acre of land in the South, and under antimalaria conditions the total crop would be doubled.

The reclamation of a large part of the United States from wilderness conditions has been accomplished with the mosquito fighting every inch of the way.

In view of the fact that a large number of our ancestors hewed away the primeval forests and erected their frontier cabins, in many instances having to lay by each alternate day with chills, it is about time that this long score against the mosquito was wiped out.

Minimum Wage Needed for Men

Large numbers of young men are securing very inadequate wages. It is also true that their employers are often in doubt as to the wisdom of retaining their services even at the small compensation they secure. It is therefore evident that something ought to be done and done quickly.

It takes a good deal to supply a young man with suitable apparel, comfortable

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quarters, nutritious food, and especially a liberal spending allowance, without which no young man can secure the "good time" to which all feel that they are entitled. Lack of a liberal wage allowance leads many to depression and discouragement from which it is an easy gradation to resort to the saloon for purposes of cheer and enlivenment, after which, with a disturbed mental equilibrium, they may be led to act with disorder or even worse.

Let us suppose that a young man of 21 years of age has a cold-blooded, unappreciative employer, whose peculiarities are known not only to the young man but to the young lady to whom he confides many of his budding hopes and enthusiasms. Realizing the improbability that her adonis will ever secure proper recognition from his heartless boss, her constancy becomes shaken and she begins to accept attentions from the widower with one child across the way, who conducts a fairly prosperous cigar store. It is easy to picture the exasperation and the disheartening influence which this experience may have upon the young man in question.

All this is wrong—entirely wrong. It is a social sin. Such a young man should be protected by a law which guarantees him not less than $20 a week in place of the $7.50 which he is now receiving.

It is strange that people have not thought more about the minimum wage before. There seems to be no limit to the conditions which justify its application. The girl at the perfumery counter in the department store and the recent young lady graduate from the school of stenography are both going to have at least $9 a week, or possibly as a compromise $8.75. If so, why should not the grocer's clerk who delivers green vegetables about the neighborhood also be saved from temptation.

A Substantial Meal

A resident of Manhattan Island with characteristic disregard of his digestive apparatus is reported to have recently eaten five dozen eggs at one meal. The modern Havershams who estimate carefully the number of calories constituting a standard meal could no doubt figure out a considerable surplus of nutritive units in the above exploit.

Press notices of this interesting event recorded in two-thirds of a column of a New York newspaper should be logically followed up by confessions as to the subsequent sensations. DeQuincey enriched the literature of his period by recording the effects produced upon himself by the opium habit, and the confessions of an egg eater showing the physical results of an intake of 4500 calories at a single meal might prove interesting.

Another Therapeutic Discovery

Mr. F. Opper, a well-known cartoonist, once suggested the following: "If, seeing a man approaching, of whom you had recently borrowed $5, you were hurriedly to cross the street and then come face to face with another man, of whom you had recently borrowed $10, wouldn't it jar you?"

If you had passed out a great variety of kind, wise, hopeful suggestions and some prescriptions to an elderly farmer crippled with "sciatica" and he should come and tell you a little later on that he had cured himself by the following simple expedient, what would you say to yourself under your breath?

A farmer in New England, hale and hearty, at 65 acquired a severe case of rheumatic sciatica. His family doctor,

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who had practised in that community for forty years, did all he could for him. Nevertheless his condition persisted, as it has a habit of doing. When, after a time, protracted suffering had produced the to-be-expected general disgust in the patient's mind, a lay brother suggested the following simple remedy: "Just slip a potato in your trousers pocket on the side where the pain is and it will cure you."

The patient told the doctor of the new treatment recommended. The doctor laughed at him; the doctor scoffed at him. Nevertheless, the remedy was tried and the patient reports the following result: There immediately ensued a desperate struggle between the potato and the sciatic nerve. The pain which was bearable before became almost unbearable. The struggle continued for three or four days, after which the nerve gave up the fight in disgust, peace and harmony was restored, and the patient says he has had no further trouble.

What the family physician had to say under the circumstances must be left to the imagination.

Civilization a Hard Strain

Only a limited degree of observation is necessary to show that the human race takes very unkindly to the process of being civilized. No doubt many a jungle scene of the past ages, if presented as a moving picture, would closely resemble the antics of the militants in England.

Anatomists find plenty of evidence that mankind suffers severely through the necessity of assuming the upright posture instead of his original position as a quadruped. It is said that various organs could perform their functions much more readily if man could once more resume his method of locomotion upon four feet.

The victim of progressive obesity, finding physical exercise increasingly distasteful, is much prone to the habit of sitting in chairs, thus gradually losing the use of his legs and making practically no use whatever of his arms. Nevertheless, the magnificent nutritive process continues to keep busy, and although the various pangs of rheumatism and neuralgia may have become very burdensome, he fails to associate these conditions with the habitually large intake of food and disinclination for exercise. Evidently the assumption of the quadrupedal position would do wonders for such people,—developing the muscles of the arms and shoulders and improving the circulation. It is probable, however, that many cases would require staunch abdominal supporters.

The Old Order Rapidly Changing

A well-known sanitarian has stated that physicians in the performance of their duties have been educating their patients to such an extent that the returns from the practice of medicine are steadily diminishing.

It is true that there is probably a much less number of hurry calls because of some sudden attack of croup or infantile indigestion. Even the most ignorant housemother usually understands that it is well to have the child breathe wholesome air and that that which is suitable food for adults should not be given to the babies. These two facts mark a long step forward and must naturally lessen the demand for the doctor's services along certain lines; but with increased knowledge there always comes a larger responsibility and there is no reason why the average family

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should not have an even greater need of professional advice than in the past.

It is becoming understood more and more that early attention to the perverted functions in adult life may ward off various impending pathological states and, the more this idea is encouraged and developed, the greater will be the demand for the doctor's services in the prevention of disease. This is in harmony with the conservation tendencies of the times, and it certainly must be more gratifying to the physician to be able to detect and relieve menacing symptoms of some degenerative organic process than it is to remedy the effects of gross ignorance in the care of young children. It is true that the new order of things requires the exercise of a much more diversified knowledge of physiology and pathology than in earlier days, but it cannot fail to be a source of pride to the doctor that the great field of medicine is making advances fully equal to the progress made in the other departments of science.

Helping the Cause of Socialism

A combination of striking employés and the large employer with a subsidized special police can stir up enough ill-feeling in an industrial community to last for a long period of years.

Irrespective of the justice or injustice of the claims of the West Virginia miners or the often-repeated demands of the operators in the Paterson silk mills, the fact remains that these two regions are plague spots upon the horizon, undoubtedly creating a great deal of irritation and helping the cause of socialism. Rather than have these menacing conditions continue indefinitely, the public interest would seem to demand that these disputes be taken out of the hands of the present contestants.

There are a good many industrial communities where peace and harmony have existed for a number of years. It is not an impossibility for employers to conduct their business in such a manner as to secure the good will of their operatives. It is much to be questioned whether any business can be considered as successful in which ill-feeling between employer and employé is constant.

If two citizens have a grudge against each other, with the backing of warm friends on both sides, it is not considered conducive to the public welfare that they should meet somewhere and fight it out. Police regulations are speedily invoked to prevent any such exhibition. On the same principle, there should be some way to terminate any industrial war within a reasonable time and not have such a dispute dragging along until it becomes a public nuisance.

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Original Articles

THE TREATMENT OF DIABETES AND PREGNANCY.*

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NEW YORK, N. Y.

BECAUSE of the confusion which still is found in the literature, the *diagnosis* must be briefly considered. In the first place, reduction of Fehling's solution does not necessarily indicate glycosuria. The errors due to the presence of uric acid, much mucus, and such drugs as salicylic acid, hydrated chloral, to poisoning by carbon dioxide, amyl nitrite, and turpentine, and sometimes possibly chloroform, camphor, mercury, morphine, hydrocyanic acid, sulphuric acid, alcohol and lead compounds, must be excluded. Even when the urine has been demonstrated to contain sugar, the distinction between glycosuria and lactosuria (the former occurring in about 1 per cent. of the women; the latter very frequently, especially in the last month) must be made; in the case of lactose the phenylhydrazin and fermentation tests do not give the reaction. The polariscope also gives definite information. Lastly, granted that a glycosuria exists, the diagnosis of diabetes must rest on the glycosuria and, in addition, emaciation, weakness, inordinate hunger, marked thirst, and increased discharge of urine, which may contain acetone, diacetic or oxybutyric acids.

The diagnosis of pregnancy and diabetes having been established, another distinction must be sharply drawn: Has a women suffering from diabetes become pregnant, or has diabetes supervened in a pregnant woman? Either may occur, but a woman who is diabetic rarely becomes pregnant, for several reasons, among which may be cited: the comparative infrequency of diabetes

* Read at the Fourteenth Annual Meeting of the American Therapeutic Society, held in Washington, D. C., May 5 and 6, 1913.

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in women; the usual incidence of diabetes about the time of the menopause, when pregnancy is decidely rare; the impaired nutrition of the patient, and the association of structural changes and functional derangements of the internal genital organs in a woman suffering from diabetes, amenorrhea, particularly, being the rule.

Of women who become diabetic during pregnancy, two classes must be distinguished: (1) those who have been glycosuric in previous pregnancies, and (2) those who have developed diabetes during the pregnancy in question. The first class is difficult to establish, but it undoubtedly does exist, and the prognosis is less serious than when a diabetic woman becomes pregnant, although more important than when pregnancy is marked for the first time by diabetes. There is no doubt but that in pregnancy generally the power of assimilating carbohydrates is lessened; this is accepted as a fact deduced from observation. In nearly two-thirds of women after the fourth month of pregnancy the ingestion of 100 grams of grape-sugar will be followed by the appearance of glucose in the urine within six hours. The reason for it is not quite apparent beyond that the vagaries of appetite of a pregnant woman may lead to the ingestion of an inordinate amount of sweets. Yet diabetes may supervene when no such history is obtainable. It is possible that a toxemia resulting from the products of conception may favor the glycosuria.

When a diabetic woman has become pregnant it can be safely said that the results can be determined with considerable probability. Each condition will react unfavorably upon the other. The duration of life for the mother will be shortened to one-half or one-third of that which may be expected for diabetes without this complication. The fetus is likely to be delivered before full term, dead and often macerated; or if full term is reached, the child is not likely to long survive its birth. Therefore, the life of the child need not merit so profound a consideration when a premature delivery is debated. For the mother, parturition will probably be prolonged and the dangers of sepsis markedly increased.

The vulnerability of the tissues of a diabetic to microbial infection is well known to be increased at least one-third, and this probability of sepsis should be considered, not only in connection with labor at full term, but as well with premature delivery, either natural or induced.

When a pregnant woman has become diabetic, other phases of the problem present themselves. The nutrition and strength of the mother, especially of her muscles, have been impaired. Hydramnios is markedly frequent; the amniotic fluid containing glucose in about one-half of the instances. In severe diabetes hydrocephalus has been found; in milder ones a child of inordinate size may be born at term. There is the same liability to sepsis, although perhaps in less degree.

The above facts, collected from the literature, form sufficient basis upon which a plan of *treatment* may be provided for each patient. In the first place, as to the diabetes: Whatever medicinal treatment one prefers should be carried out, the type of diabetes having been carefully ascertained. Lime salts should be used sparingly, and this is of particular note because several of

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the natural waters in vogue in the treatment of diabetes are calcareous. For the purpose of diagnosis only, an absolutely carbohydrate-free diet should be employed, and that for as short a period as is possible for accurate determination of the type of the disease. From the standpoint of the obstetrician the so-called diabetic diet is objectionable. The typical diets in parallel columns will illustrate this:—

Diabetic Diet.	Pregnancy Diet.
May take:	*May take:*
Soups and broths of beef, chicken, mutton, veal, oysters, clams, terrapin or turtle (not thickened with any farinaceous substances), beef-tea.	Soups and broths of mutton, chicken, oysters, and clams.
Fish. Shell-fish and all kinds of fish, fresh, salted, dried, pickled or otherwise preserved (no dressing containing flour).	Fish. When it agrees. Raw oysters, raw clams.
Eggs. In any way most acceptable.	Eggs. Excepting fried.
Meats. Fat beef, mutton, ham or bacon, poultry, sweetbreads, calf's head, sausage, kidneys, pig's feet, tongue, tripe, game (all cooked free of flour, potatoes, bread or crackers).	Meats. Beef, mutton, chicken, game. Butter, fat, sweetbreads, ham.
Farinaceous. Gluten porridge, gluten bread, gluten gems, gluten biscuits, gluten wafers, gluten griddle cakes, almond bread or cakes, bran bread or cakes.	Farinaceous. Good wheat bread, corn bread, oatmeal, wheaten grits, rice.
Vegetables. String beans, spinach, beet-tops, chicory, kale, lettuce (plain or dressed with oil and vinegar), cucumbers, onions, tomatoes, mushrooms, asparagus, oyster plant, celery, dandelions, cresses, radishes, pickles, olives.	Vegetables. Baked potatoes, spinach, macaroni, greens, cresses, celery, green peas, lettuce, asparagus, green corn, oranges, grapes, stewed fruit.
Desserts. Custards, jellies, creams (without sugar), walnuts, almonds, filberts, Brazil nuts, cocoanuts, pecans.	Desserts. None but the plainest.
Drinks. Tea or coffee (without sugar), pure water, peptonized milk.	Drinks. Water (freely), cocoa, milk, tea, and coffee.
	Nursing Women:
	During the first three or four days after delivery the diet should consist of liquid food made of the cereal grains, with a small allowance of animal broths. After the bowels have been thoroughly opened, begin to resume the normal diet. Allow tender beef, mutton, chicken or game once a day, with baked potatoes and green vegetables. Wine jelly, blanc mange, and simple custards should constitute the desserts.
	At the end of ten days the regular meals should be given, consisting of the

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most nutritious and digestible substances. Cocoa and chocolate may be used. Nursing women should avoid all indigestible meats, made dishes, gravies, rich desserts, pastries, etc.; coffee, stimulants, and acid fruits. *Above all they should not be subjected to depressing mental or nervous influences.*

Must not take:

Liver, sugars, sweets or starches of any kind, wheaten bread or biscuits, corn bread, oatmeal, barley, rice, rye bread, arrowroot, sago, macaroni, tapioca, vermicelli, potatoes, parsnips, beets, turnips, peas, carrots, melons, fruits, puddings, pastry, pies, ices, honey, jams, sweet or sparkling wines, cordials, cider, porter, lager, chestnuts, peanuts.

Must not take:

Pork, veal, stews, hashes, gravies, made dishes, rich desserts.

The only way to deal with this conflict of purpose between internist and obstetrician is to keep the carbohydrate intake as near the assimilative powers as is possible, regarding small percentages of glucose as less undesirable than an impaired nutrition of the mother. But the moment that headache or vertigo occurs, or acetone or diacetic or oxybutyric acid appears in the urine, and these symptoms and signs are not promptly relieved by high rectal irrigations containing maximum doses of sodium bicarbonate, the carbohydrate ingestion must be increased regardless of theoretical objections.

The problems for the obstetrician are complex. He should take accurate pelvic measurements and estimate in so far as possible the size of the child and the amount of amniotic fluid. He should be prepared to induce labor at such time as the size of the child and lumen of the passage indicate for a speedy and safe delivery. He should be prepared to remove a dead fetus from the uterus at the earliest possible moment. Finally, he must demand for himself and his assistants and nurses absolute asepsis, remembering that a diabetic has no safe borderland of natural or acquired immunity to bacterial infection.

The problem which presented itself for solution and led to a search of the literature, with the results above given, was as follows: A young woman, recently married to a former patient, residing in a suburban town, presented herself suffering from an acute catarrhal bronchitis, of several days' duration. She was four months' pregnant. The urine at that time showed nothing abnormal excepting a marked difference between the solids of the urine of fasting as compared with those of digestion. The bronchitis promptly disappeared under treatment, and on a visit for inspection a month later the urine of digestion was found to contain 2¼ per cent. of glucose. As there was possible contamination of one bottle, the urine was examined a week later, and both specimens found to be normal. The same report was made again after two weeks. Five weeks after the discovery of glucose in the specimen contained in the supposedly contaminated bottle, 1¼ per cent. of

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glucose was found in the urine of digestion. The patient was sent for, and gave a history of increased appetite, annoying thirst, some loss of flesh, and marked weakness—symptoms which had been denied in the previous month. A carbohydrate-free diet for a week, for experimental purposes, reduced the glucose by 7/8 of 1 per cent. in the urine of digestion; 1/2 of 1 per cent. of glucose was found in the urine of digestion, and none in that of fasting, three days later. Two weeks from this date, upon as restricted a diet as was deemed prudent for a pregnant woman, the urine of digestion contained 2¼ and that of fasting 5/8 of 1 per cent. of glucose. Uranium nitrate, 1/2 grain, thrice daily, was given, with the result that in ten days, although the daily amount passed was 80 ounces, the glucose content had fallen to 5/16 in the urine of digestion and 1/5 of 1 per cent. in the urine of fasting, and three weeks later had disappeared entirely. As soon as it was apparent that the diabetes was controllable, and a viable child probable, measurements of the pelvis were made by my associate, Dr. Henry Hubbard Pelton; they were found to be normal, excepting that the internal conjugate was more than a centimeter (1.1) too short. The fetal heart was 140, heard to the right and below the umbilicus, and the head seemed small. The husband was advised that the patient should be under competent supervision by an internist and by an obstetrician. The basis for this recommendation was the considerable maternal and high fetal mortality resulting from diabetes complicating pregnancy, according to the British authorities and, to a less degree, to the French. The German writers, however, making no close distinction between lactosuria in pregnancy and glycosuria, on the one hand, and between glycosuria and diabetes on the other, attribute much less importance to the condition. The mother declined the advice. One month before the expected labor Dr. Henry Clarke Coe was called in consultation and, notwithstanding that his attention was called to the shortened anteroposterior diameter of the pelvis, and the probabilities of a large child, sanctioned her attendance at her country residence. Apparently, he was influenced by the German authors in reaching this conclusion.

A child was born at term, said to have weighed "over seven pounds," after a tedious instrumental delivery, the local physician having been assisted by a nurse pressed into service. Three weeks later the urine contained no glucose, but 0.33 parts per mille (Esbach) of albumin. Six weeks after her confinement the husband reported that the patient was still confined to her bed, having never been free from fever, and requested that she be seen at his country house. The urine, sent on the previous day, contained 1/8 of 1 per cent. of glucose in both specimens. The following day the patient was found to be suffering from septicemia, the cause probably being a perineal abscess. There was a marked femoral phlebitis of the right side, which rapidly cleared up after applications of the ointment of soluble silver. The next day my associate opened the abscess and drained it, with complete recovery. At my visit the father inquired why the child did not use his left arm, and why the application of faradic electricity, as ordered by the local physician, had not benefited. Investigation showed the arm in the position usual after

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fracture of the clavicle. No evidence of either form of so-called "obstetrical paralysis" could be found. It was impossible to locate the outer end of the clavicle. Two days later Dr. Carl Beck made a Roentgen ray plate which showed a downward and backward dislocation of the outer end of the clavicle. This he reduced, and afterward kept the bone in place by suitable bandages, with recovery in due time. Two months from the date of the confinement but a trace of glucose was found in the urine, and both mother and child had recovered from the disabilities attending the labor.

The treatment for a diabetic woman who has become pregnant is as follows: If hydramnios exists (usually in about one-third of the instances), or the amount of glucose in the urine is excessive and uninfluenced by treatment, or the loss of flesh and strength is marked and, absolutely, if the fetus is dead, the uterus should be emptied at once. The viability of the child is usually problematical. It is needless to state that a diabetic woman should not marry or, if married, should not be allowed to become pregnant.

If a pregnant woman has become diabetic the dangers of labor are increased, not only from the impaired vitality and lessened resistance toward infection on the part of the mother, but as well by reason of the fact that in severe diabetes a dead and even macerated child may result, or, if the disease is mild, one of inordinate size, which, if the time of labor is not anticipated by operative interference, may endanger the life of both. On the part of the mother, a curable may be converted into an incurable diabetes by succeeding pregnancies.

In the glycosuria of pregnancy each patient must be carefully studied, and that procedure conducted which is justified by the condition of the patient and the persistence of this symptom.

Of the treatment of the diabetes itself, no extended consideration need be given beyond that which the disease demands in women who are not pregnant. Obviously, more latitude in diet is allowable, and it is usually safer to exceed the tolerance for carbohydrates, even with the persistence of small percentages of glucose in the urine, than to be too much a slave to theory. Careful and continuous observation is demanded, in order promptly to meet not only the onset of acidosis, but as well that of toxemia, frequent in pregnancies of the non-diabetic.

DISCUSSION.

Dr. Alexander D. Blackader, Montreal, said that if he had been asked to see a case like that described in the paper in consultation he would have suggested the services of a proper accoucheur. Just why he had been asked to open the discussion upon this subject when he had not seen a case for years, he did not know. He mentioned, however, 2 cases among friends, which he had referred to other physicians. In 1 there had been no return of the glycosuria after term; the other had gone on to confirmed diabetes. He thanked the essayist for bringing this subject to the attention of the Society. More should be written upon it. He was glad to learn that uranium nitrate had proved of value in the treatment of the glycosuria.

Dr. Robert T. Morris, New York, said that pregnancy was somewhat out of his line, but he believed that in many cases glycosuria was due to pancreatitis and the consequent squeezing of the islands of Langerhans caused through the effects of bacteria escaping

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from the duodenum. As soon as the pancreatitis was relieved the glycosuria disappeared. The indication was to do away with the bacterial infection if possible.

Dr. J. J. Kinyoun, Washington, D. C., said that in 200 autopsies at the Tuberculosis Hospital in that city he had noted changes in the pancreas with squeezing of the islands of Langerhans in a considerable proportion of cases. Only in rare instances, however, did such patients give a history of diabetes.

Dr. O. T. Osborne, New Haven, Conn., said that he had already spoken of uranium nitrate. There was good authority for the statement that it was a poison, particularly to the kidneys, and he did not believe that it could be given without danger. It had no therapeutic value commensurate with the dangers attending its use.

Dr. Wilcox said that there was no doubt but that uranium nitrate was a poison, but the danger to the kidneys could be obviated through frequent examination of the urine.

Dr. Osborne asked Dr. Wilcox how much of the drug he gave.

Dr. Wilcox replied that he did not give more than 2 grains a day.

DISCUSSION OF PAPER BY DRS. FRIEDENWALD AND LEITZ.*

Dr. W. Wayne Babcock, Philadelphia, referred particularly to cases with perforation. In 17 such cases that had come under his observation there had been no symptoms before perforation, excepting in 1 instance. The perforation was sudden, usually after a meal. This gave rise to the reflexion that many persons in apparently perfect health were probably going about with gastric ulcer; 16 of the patients were males. Treatment was surgical, the object being to secure drainage. No especial measures were taken to heal the ulcerated surfaces. All the patients recovered.

Dr. Robert T. Morris, New York, said that, as a rule, the less that was done for these patients in the way of a radical operation, the better. Within a year and a half in 3 cases with perforation and collapse, he had operated to secure drainage, expecting to do a complete operation later on. No second operation was required, however, as all the patients recovered without it. If he had done a complete operation in the first place all might perhaps have died.

Dr. Louis M. Gompertz, New Haven, inquired with regard to the diet employed by Dr. Friedenwald in his cases.

Dr. Freeman said that the paper marked a distinct advance in the treatment of gastric ulcer. Methods so far suggested had proved unreliable. He had used a 2 per cent. spray of scarlet red in 1 instance. The patient had presented symptoms of gastric ulcer, off and on, for two years. Just before entering the hospital he had vomited blood and passed blood per rectum. The spray was used over a period of eight days, during which the patient's condition improved rapidly; the pain subsided and the symptoms disappeared. He would like to believe that the scarlet red was responsible for the good result. He wondered whether there was any possibility that it might irritate the ulcerated surfaces, and thus have a tendency to cause cancerous degeneration.

Dr. A. Ernest Gallant, New York, spoke of the difficulty sometimes encountered in securing drainage. When practicable, however, the treatment mentioned by Dr. Morris was undoubtedly the safest and quickest. In 1 case he was unable to keep the patient in bed after the eighth day, and the patient was at work at the end of two weeks.

Dr. Friedenwald said that he had seen a number of cases of gastric ulcer with sudden perforation and collapse, and had reported 10 such cases last year. Those treated with scarlet red, however, were subacute cases. He made no claim that it was a specific,

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* See MONTHLY CYCLOPEDIA for June.

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but it was a useful adjuvant. The patient should be given the usual treatment, and scarlet red was an additional help. Some cases did very well with rest in bed and atropine, bismuth, or one of the other remedies commonly employed. The treatment was either medical or surgical. The patients who did not respond to medical treatment should be treated surgically.

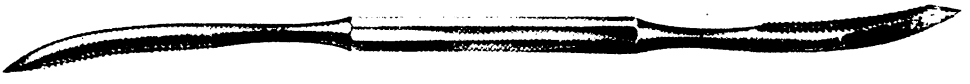
TREATMENT OF CHRONIC SUPPURATION OF THE ANTRUM OF HIGHMORE (With Exhibition of a New Instrument).*

By E. B. GLEASON, M.D., LL.D.,

Professor of Otology in the Medico-Chirurgical College of Philadelphia,

PHILADELPHIA, PA.

THE instrument shown this evening is for the production and maintenance of a comparatively large opening from the maxillary antrum into the nose beneath the inferior turbinated body, in the treatment of chronic suppuration. It was devised after considerable experience in the treatment of antral suppuration with Wells's trocar and rasp cannula. The instrument is a double-ended trocar, one end of which is probe-pointed, and the other a triangular sharp point. Both ends are slightly curved near their tips and of the diameter No. 18 of the French catheter scale. On the concave surface, for a distance of one and three-quarter inches, is a coarse file or rasp so constructed as to cut only on the pull.



Gleason's antrum rasp.

The instrument is designed for the treatment of chronic suppuration only, as acute suppuration, unless maintained by gangrenous tooth-pulps or some other neighboring focus of infection, quickly subsides under treatment of the region of the ostium or after a few irrigations of the antrum through a Litzwitz needle.

In chronic suppuration the diagnosis is confirmed by thrusting a Litzwitz hollow needle through the so-called "soft spot" beneath the inferior turbinate, which is somewhat anterior to the middle of its suture with the nasal wall, after thorough cocainization of this portion of the nose with a 10 per cent. solution of cocaine in 1:1000 adrenalin solution. The antrum is then washed out through the needle with sterile normal salt solution, which is collected for inspection as it flows from the nostril into a finger-bowl held by the patient.

Should the irrigation fluid thus collected contain pus, the needle is withdrawn and the triangular point of the trocar placed in the needle puncture and

* Read at a meeting of the Section on Otology and Laryngology, of the College of Physicians, Philadelphia, March 19, 1913.

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rotated until the trocar penetrates the antrum as far as its lateral wall. The instrument is withdrawn in such a manner that the coarse file is held firmly against the anterior edge of the opening, a considerable portion of which is thus cut away. The instrument is then reversed and the probe-pointed end inserted into the antrum. The file is now used in such a manner as to produce an oval opening rather larger than a dime. As the nasal wall of the antrum is very thin in this locality, and the coarse file cuts away the soft bone like a succession of knife-blades, an opening of this size is very quickly made.

The antrum is irrigated every day by the surgeon through a Eustachian catheter until the patient has learned to insert the catheter into his antrum and irrigate it himself. This he very readily does as long as the opening is the size of a ten-cent piece. The patient is instructed to irrigate his antrum once a day with one or two pints of normal salt solution and present himself for inspection at the surgeon's office once or twice a week. A cure is greatly hastened by the constant drainage of the antrum into the nose through such a large opening in its nasal wall; which, however, tends somewhat quickly to close owing to the development of exuberant granulations on the edge of the opening. These are cut away from time to time with the probe-pointed end of the instrument until a cure of the suppuration has been brought about.

SOME NEW THINGS IN SPONDYLOTHERAPY.*

By ALBERT ABRAMS, A.M., M.D.,

SAN FRANCISCO, CAL.

Symptomatic Cure of Aneurisms.

A conservative estimate of my results, embracing nearly 100 cases, prompts me to say that we are finally in the possession of a specific method of treatment for aneurisms. My earlier achievements led me to believe that results could be attained within a few weeks, but since more advanced cases have come under my observation I believe we are not justified in expecting results in a period of less than one month. The treatment, as you all know, has for its object to elicit the aortic reflex of contraction. I want, however, to caution you not to exhaust this reflex by overtreatment.

Exhibition of a Patient.—This gentleman whom I show you is a physician, and is over 80 years of age. He has come all the way from El Paso, Texas, as an expression of gratitude and for scientific reasons. More than a year ago he came to San Francisco against the advice of his physicians, who informed him that he would "choke to death" before his arrival. He had an enormous aneurism involving the arch of the aorta and the innominate artery. Within one week, practically all the symptoms of pressure disappeared

* Abstract of an address before the American Association for the study of Spondylotherapy, Chicago, Nov. 12, 1912.

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and after about five weeks he was discharged. He has remained well ever since.

Intubation of the Duodenum.

By means of the pyloric reflex of dilatation, which consists of pressure or concussion of the fifth dorsal spine, the stomach-tube can be easily introduced into the duodenum. The maneuver in question puts the stomach in a vertical position and dilates the pylorus. These skiagrams show the tube in the duodenum. The many advantages in diagnosis and treatment accruing from this method of intubation need not be recounted. Let me tell you, however, how this pyloric reflex of dilatation may be utilized in everyday practice: (1) You can at once cause the passage of drugs from the stomach into the intestine. (2) You can avoid the nausea incident to the ingestion of drugs into the stomach. (3) You can prevent the symptoms of indigestion of starchy foods by anticipating the duration of amylolytic digestion by forcing the food into the duodenum within the time-limit for the digestion of starchy food. (4) You can immediately arrest, in a number of instances, vomiting. (5) If certain symptoms are due to gastric indigestion, these symptoms at once abate if the contents of the stomach are forced into the intestine.

Intubation of the Colon.

All authorities are practically agreed that to pass a tube beyond the sigmoid flexure is impossible. Here are skiagrams to show that the tube may be passed beyond the sigmoid flexure up to the caput coli. This maneuver is achieved by pressure at the eleventh dorsal spine, which straightens the sigmoid flexure and permits of the passage of the tube. Within the tube is a strong, flexible cable.

One may anticipate many things from colonic intubation; notably the prevention of appendicitis and the cure of autointoxication. One may achieve Metchnikoff's Utopian conception of macrobiosis by thorough colonic cleanliness.

Treatment of Endocarditis.

In the past few years I have seen 3 cases of chronic endocarditis which have been cured by injections of fibrolysin coupled with concussion of the seventh cervical spine to elicit the heart reflex of contraction. The latter is practically a method of cardiac gymnastics. I have heretofore hesitated to report these results, and would not have done so had it not been that similar effects were achieved by the same method by Dr. Haffner, of Zürich.

Visceral Tonometry.

You are already familiar with my methods for estimating the tone of the viscera, which I have neologized as "visceral tonometry." These methods permit us to determine with mathematical accuracy the condition of the organs in health and disease.

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Permit me to show you my method for determining the tone of the stomach.

You will note that to one end of an ordinary stomach-tube an inflatable balloon is attached, and that to the end projecting from the mouth is fixed a Y-tube, to one end of which a manometer is connected and to the other a rubber bulb for inflating the balloon in the stomach.

The tube having been introduced, the balloon is inflated and the degree of inflation noted on the manometer. Next, I concuss the seventh cervical spine and observe the manometer again.

Concussion of the seventh cervical spine, by stimulating the vagus, will cause the stomach to contract, and the degree of contraction may be determined manometrically. After this manner, one may recognize an orthotonic, hypertonic, hypotonic or atonic stomach.

Function of the Spleen.

I am not prepared at this moment to give you definite facts concerning the functions of this organ, which has always been an enigma to the physician. As you know, we have established the fact that the spleen can be contracted and dilated at will. One may, by evoking the splenic reflex of contraction, induce a paroxysm of malaria in a larval case.

I believe that by the aid of this reflex we can make an early diagnosis of typhoid fever with the Widal reaction. Professor Widal, of Paris, has promised to conduct for me a series of observations to this effect.

We know that by the aid of the splenic reflex of dilatation we can produce at once an enormous increase of red corpuscles in the blood. In other words, I believe I have solved the functions of the spleen by the aid of these reflexes.

I shall show you at this convention the practical results achieved by the great work done by Sajous, and I want also to mention the name of J. Madison Taylor, whose work along the line of the vertebral reflexes has been a source of great inspiration to me in the elaboration of my results.

AN APPRECIATION OF THE TEACHINGS OF DR. ABRAMS.

By J. MADISON TAYLOR, A.B., M.D.,

PHILADELPHIA, PA.

The choice of a suitable name to describe a new department of clinical medicine is difficult. *"Spondylotherapy,"* the title of Dr. Abrams's book, is descriptive of mechanical treatment applied to the backbone. It does not seem to me fully to cover the ground embraced in the mass of valuable facts and conclusions set forth.

Dr. Abrams has evolved a concrete presentation covering the whole range of clinical findings attributable to the spinal reflexes, elucidating the significance of baffling phenomena accredited to reflex irritation, and contributing much to their right interpretation. Hence it seems to me a word should be

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chosen at once comprehensive and descriptive. Under the caption "reflexology," or the science of the reflexes, might be included various descriptive subheads, such as "reflexodiagnosis," "reflexopathology," "reflexotherapy."

As clinical medicine evolved, increasing attention was directed to normal and abnormal phenomena explainable through the spinal reflexes. To disturbances in this sphere were ascribed a host of morbid states,—sometimes correctly, at others vaguely, and also at times altogether absurdly. There is undoubtedly in the domain of reflex disturbances enormous ground for investigation, and the foundation for great gains in control over distressing derangements.

The medical profession has given the subject a good deal of detached, fragmentary attention—much of which is ridiculously out of proportion to the bedrock facts. So many of the observations proved to be inaccurate, the conclusions so unwarranted, that doubts were freely expressed by those equipped with a true, scientific critical order of mind, and the subject fell into discredit. Inasmuch as the physiological as well as the clinical domain of the neurologist was chiefly invaded, the American Neurological Society held a symposium on "Reflex Irritation," and I, personally, recall the occasion. Authorities throughout the United States and Canada came together and the results were disastrous to the uncritical, loose-thinking observers who utilized these phenomena as a convenient dumping-ground for conjectures and half-baked therapeutic principles and measures. It would seem a bubble had been burst. I carried away a sense of disaster, of confusion, of pity for my own credulity, of regret that what had given signs of so much promise had been ruthlessly swept away. To paraphrase an aphorism of Osler (when speaking at a symposium on "Antipyrin"), we were "on the top of a reflex irritation wave, which must subside," and then we could soberly and dispassionately subject the facts to critical scrutiny and winnow the grain from the chaff.

Not only have the apostles of scientific medicine been many times led far afield by the glittering promises held out in the mass of observations on reflex irritation, but this has proven a profitable grazing-ground for irregular healers, doing business under divers awe-inspiring, pseudo-scientific names. These self-ordained conservators of health, having acquired a few excellent principles of elasticizing rigid structures, derangements due to densities, adhesions, as well as the very obvious vascular responses to vasomotor mechanisms and the like, became emboldened to assume that they had, like Hahnemann, achieved "the one and only law of cure." Alas! there is no one and only law whereby human ailments can be set aright. Not even Mother Eddy, the self-sanctified, has compressed the whole of "science and health" into one small book. Diverse and complex we are; full of surprises and tortuities shall we remain till the Great Day comes.

Meanwhile, there is much to do for all toilers in the vineyard of medical science, striving earnestly, patiently, but, above all, critically; being obsessed by no pipe-dream of panaceas, or of putting to rout tuberculosis, gout, appendicitis, and nephritis by denials of their existence. Neglected, untilled fields of most promising kind there are in plenty in this vineyard of the medical sciences.

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Dr. Abrams has focused our attention on one, in my opinion, likely to yield increasingly valuable returns—that of the scope and significance of the spinal reflexes. In his book will be found an impressive aggregation of convincing evidence gleaned from the whole realm of scientific medical findings. He has digested this, analyzing and bringing together detached facts, displaying their significance, their practical interrelationships, and subjoining his own pronouncedly original interpretations and recommendations.

To this achievement he has added the products of a ripe experience and knowledge gathered from the best sources, not only of his own but the personal and hospital services of domestic and foreign leaders in opinion. He has presented his postulates, inferences, and conclusions to the candid criticism of those whom we have learned to regard as competent judges of survival values.

Although he has made a deep impression upon the consciousness of many a reputable physician, the very brilliance of his findings, the simplicity of his remedial principles, the unusual promptitude of his results in many heretofore-called incurable states, induce suspicion and doubt in the minds of those who refuse to examine the evidence or give him a fair hearing. However, the ground for my welcoming this new angle of vision, this novel explanation of long-obscured phenomena, did not grow overnight, but is the logical result of much browsing along unfamiliar paths, noting appearances, and studying illuminating principles of physiology and therapeutics. It seems to me, there is now soon to be reduced to an exact science the genus and differentia of a domain of clinical medicine which will warrant the judicious consideration of all whose aspiration it is to relieve the sufferings of mankind.

The significance of reflex irritation as an etiological factor in physiological disorders is obviously a large one, demanding the most thorough investigation. There exists here a vast array of findings awaiting expert study. When we come to the domain of psychopathies the research has only begun. At the present time, medical literature is full of contributions from psychopathologists and those who enjoy the conviction that they come within this class. These are not only those who really know something about psychopathic and neurotic phenomena, but a larger group convinced of the adequacy of psychopathological findings to explain and cure any malady. Freud and his disciples offer much ground for curing through psychoanalysis, accepting as their questionable *credo* the sexual impulse and its endless divagations. Sidis shows plainly that the fear instinct dominates all other causal agencies. So of other lines of evidence. Back of all lies the domain of physical determinants of psychopathic phenomena. And the major portion of these are sources of reflex irritation—causal agencies working through spinal nerves.

Among the more recent and promising propositions is the postulate of Upson, of Cleveland, that dental irritation, especially non-sensory forms of irritation—impactions, deformations, latent abscesses, and the like—offer ground for the elucidation of physical deteriorations, psychopathies, insomnias, and even insanities. My experience leads me to feel great confidence in this view.

In brief, we have no right to abandon hope, in a host of baffling conditions,

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until all avenues of possible reflex irritation are searched. Until we have greatly amplified our knowledge in many directions, we cannot search confidently or hopefully.

The light which Dr. Abrams's researches afford is the largest source of illumination—and I, for one, welcome it with thankfulness.

THE TREATMENT OF THE PNEUMONIAS WITH MERCURY AND SULPHUR INTERNALLY.*

By LOUIS KOLIPINSKI, M.D.,

WASHINGTON, D. C.

Pneumonias dominate the pathology of diseases of the lung. Individuals who in a lifetime have not been victims of these maladies are extremely prone to be seized upon in old age by a severe or fatal attack.

Immunity from a previous pneumonia is of short duration, and is no protection from a second or third infection, which, as in the case of erysipelas or articular rheumatism, is more prone to return to a former victim than to attack a new one. The great prevalence and heavy mortality of these diseases place them among the most important in medical practice, and their successful treatment becomes a subject of great significance.

The identification and early recognition of the pneumonias is a work both simple and sure, and where they are overlooked or miscalled the reason of error is often negligence of physical examination and want of analysis of subjective and objective symptoms. Pneumonias are often diagnosticated by the laity,—often by mothers in their children. The conscious adult subject feels himself suddenly stricken by a grave and serious malady.

The treatment of the pneumonias has varied with fashion and times from the heroic and tragic, through the meek and palliative, to the resigned and fatalistic. Thus, free and repeated bleeding, cupping and extensive fly blisters, with aconite, digitalis and veratrum viride, with mercury and tartar emetic, all have been in vogue in their day, to be followed later on with baths, wet packs, poultices, ice-packs, and cold winter air. Still later came the search for a serum or antitoxin. Finally, there prevails the use of opium for chest pains, sleeplessness, and cough, and of oxygen for dyspnea, with the knowledge that the disease is limited, and where nature cures, awaiting inactively the happy outcome.

Almost all of the treatments practised have been without clear or rational purpose, and, where markedly successful, have been equally efficient in other febrile diseases. Thus bleeding, aconite, veratrum viride, opium, and oxygen meet no clear or evident indication, but, on the contrary, are directly harmful; while quinine, digitalis, the cold-water bath and pack, and cold air are of

* Read at the Fourteenth Annual Meeting of the American Therapeutic Society, held in Washington, D. C., May 5 and 6, 1913.

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equal or more value in other acute febrile diseases, and are doubtless more useful in supporting the patient than in arresting or destroying the disease.

To consider, then, a suitable treatment for these diseases it is necessary to describe briefly the morbid anatomy and histology of the organ affected and the symptoms resulting therefrom, since without these facts established and admitted it cannot be made plain what the purpose and the plan of treatment should be.

Pneumonias[1] are due to the irritant action of micro-organisms of different kinds upon the lung substance. They are generally inhaled, sometimes carried with the blood or lymph. *Lobular, catarrhal,* or *broncho- pneumonia* is usually a secondary or terminal lung inflammation, a bronchitis having introduced it. A specific germ is impossible, but the pneumococcus is often found. The affection is most common in infancy, childhood, and old age, and is the chief dangerous complication of measles and of whooping-cough. The lung is enlarged and collapses slowly. It crepitates on handling, but small nodules or indurations can be felt. Sunken, darker areas of atelectasis are visible. The unaffected parts may be emphysematous. The pleural surface over consolidations is often inflamed. The cut surface is smooth. The small bronchi are filled with mucopus. The peribronchial glands are enlarged. Splenization is the term given to this appearance. The air spaces are filled with leucocytes and epithelial cells, and a fluid, serous, or mucoid exudate. Leucocytes infiltrate the walls of the smallest bronchi, which are also occluded. The vesicular walls are likewise infiltrated.

Abundance of active bacteria, pyogenic and saprophytic, can carry this process to suppuration or even gangrene. A bronchopneumonia in which inflammatory infection ceases or is limited, however, rapidly undergoes resolution, and the products thereof are removed by expectoration and by absorption.

Lobar, croupous, fibrinous, or pleuro- pneumonia is a specific inflammation of the lung most often caused by the *Diplococcus pneumoniæ* of Fraenkel and Weichselbaum. Other pathogenic micro-organisms can cause a croupous lung inflammation. Infection seems usually to enter through the air-passages.

Lobar pneumonia is found at all ages and is the pneumonia of the prime of life. It is mildly contagious, and the immunity that the disease leaves behind is too short to deserve the term. The affection seizes upon one or more lobes of the lung, oftener on the right side, much less frequently on both, and runs a short, fixed course of inflammation which, in its changes as well as in the activity of its symptoms, must be counted by hours as in the case of a diphtheria, and not by days.

Laennec's description of the pathological changes of lobar pneumonia, based upon the gross appearance of consistency and color, comprise the three well-known stages of engorgement, red and gray hepatization of the lung.

In the engorged state the affected lung is bright red. Crepitation on pressure is less. The specific gravity is increased. On section, blood or serum

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1 ADAMI and NICHOLLS: Principles of Pathology, vol. ii. COPLIN: Manual of Pathology, 5th ed. STRÜMPELL: Lehrbuch der spez. Path. u. Therapie der inneren Krankheiten.

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exudes. The vesicular capillaries are dilated and winding. The epithelium of the vesicles is in part desquamating. Free red and white blood-cells abound. The interlobular connective tissue is hyperemic.

In red hepatization, solidification of the exuded serum has occurred. The inflamed lung is red-brown, does not diminish in size when removed, and does not crepitate. Its specific gravity is increased, and it quickly sinks in water. Its cut surface is granular, owing to section of minute fibrin coagula. From the bronchioles larger fibrin casts protrude. The lung tissue is friable. As Coplin says, there is nothing more characteristic than this last fact. With the microscope the blood-vessels are seen to be overfull. The air-vesicles contain the hardened exudate, holding within its meshes leucocytes, red blood-corpuscles, and epithelial cells. The epithelial cells are much less numerous than in bronchopneumonia.

The end stage of the acute inflammation is that of gray hepatization. The inflamed part is now softer and more elastic, but tears readily. The color has markedly changed, being now a grayish yellow. The cut surface is smooth and has become moister. The peribronchial glands and nodes are enlarged. With the microscope are observed degenerated leucocytes and epithelial cells. The fibrin is disappearing and an albuminous fluid remains. This stage is consequently that in which the emulsified or partly digested organic inflammatory structures can be expelled or absorbed.

With the pathological changes in the lung described as characteristic of catarrhal pneumonia, the *symptoms* by which the disease is recognized, and its different *terminations,* are as follows:—

The primary form is similar to a severe bronchitis, with a fever high or low, with or without an initial chill, pleuritic pain or soreness in the side. There is much coughing, with mucopurulent expectoration, not colored with blood. There is a unilateral area of lung crepitation at the base, with accompanying bronchitic râles; rarely the manifestations are on both sides. No bronchial breathing exists and percussion dullness is very slight.

The duration in favorable cases is several weeks, and recession of the fever is gradual. There is no specific micro-organism. The influenza bacillus is probably often active.

Similar, but diffused and much oftener bilateral, physical signs, and always with a preceding bronchitis, are found in secondary catarrhal pneumonia, prevalent during the existence of other diseases,—typhoid fever, influenza, whooping-cough, measles, chronic bronchitis, pulmonary consumption, and others.

The terminations of these pneumonias are variable. The course in some cases is short, in others long; many are fatal.

The symptoms of catarrhal pneumonia in the child are more marked and severe than in the adult. The general condition is grave. The patient is restless or somnolent. There is much fever and a rapid pulse, with a dry, shallow, painful cough, and scanty or no expectoration. The respiration is forced and very rapid, even to 60 or 90 in the minute. The evening temperature is high. The physical signs are: Subcrepitant râles, lessened percussion note,

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bronchial breathing, and bronchophony. The course is tedious and uncertain, and the disorder is often rapidly or slowly fatal. The vital symptom is dyspnea, with death from suffocation or asphyxia and acute heart dilatation.

Croupous pneumonia begins very suddenly, with a severe chill and a fever rising rapidly. A gradual beginning of the disease is much rarer. In many cases, simultaneously or within a day's time, a severe pleuritic stitch is felt. Cough, inspiration, and speech are thereby suppressed. Accelerated breathing and dyspnea become increased more and more as solidification of the lung extends. The cough is short, shallow, and painful, and with much effort the characteristic glairy, tenacious, and bloody sputum appears. This sputum contains whole and dissolved red blood-cells, swollen and fatty leucocytes, alveolar epithelium, the *Diplococcus pneumoniæ* and other bacteria, all in threads of mucin. Rolled up, branch-like fibrin casts of the bronchioles are also found. In the end stage of the lung inflammation the viscidity of the sputum disappears; the latter is then mucopurulent.

Herpes of the lips and nose is often observed, usually in cases the course of which is favorable and tends toward recovery. From the high fever, painful cough, and rapid breathing, the patient sleeps but little, or else is much disturbed at night. Death or recovery with critical cessation of fever and subjective symptoms occurs within a week.

Physical examination reveals the affected side with shallow, the unaffected side with deeper, inspirations. The respirations in the adult are 30 to 60 in the minute. The accessory muscles of breathing are at work. The appearance of the face is either pale, congested, or cyanotic. The percussion note is a dull, tympanitic one—not flat as from effusion. In central pneumonia the note is unchanged. Auscultation elicits the crepitant râle (Laennec), bronchial breathing, and bronchophony. With softening and resolution of the solidified lung occurs the *crepitatio redux*. Leucocytosis in the blood is found in frank, active, and favorable cases. The finding of the pneumococcus therein indicates the case to be a grave one.

The chief danger to life in croupous pneumonia is extensive lung inflammation and the resulting diminished area of respiration. This danger is further augmented by all weak states of the heart, such as result from fatty degeneration of the heart muscle, from fibrosis, from the heart lesions of alcoholism, of asthma and of emphysema, and may be accompanied by the degenerative changes of age and arteriosclerosis. Collapse from heart weakness is a further danger. This collapse, as in typhoid fever, occurs with a rapidly sinking febrile temperature.

From these considerations of the form and nature of lung inflammations, the indications of *treatment* are plain, and are evidently different from those long and customarily followed. These indications are to absorb or remove the inflammatory exudate, to overcome the septic fever, and from the beginning of the treatment to consider how much additional labor the heart is able to perform. The liquefied exudate must be eliminated by coughing or by lymphatic absorption, and the septic fever by an appropriate systemic antiseptic. The heart must, if necessary, be aided with digitalis.

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The class of remedies called stimulating expectorants, with one exception, possess no qualities adequate to fulfill the purpose contemplated, so that in treatment they fall into the place of feeble or fanciful adjuvants. Thus, senega, Tolu balsam, copaiba, the oil of turpentine, benzoin, the ammonium salts, and the alkaline iodides are all unequal to the task proposed.

Creosote is the exception referred to. Its praise by many practitioners for its favorable effects in these diseases is well deserved. It reduces high fever, strengthens the pulse by slowing it, and has a most pronounced power to stimulate the act of coughing. Creosote is useful in the pneumonias, but lacks the force or power to cut short or abort with certainty and uniformity the inflammation. While, therefore, a most useful agent, it is perhaps only one of second rank.

A number of years ago, the writer noted in several instances of broncho-pneumonia in infants, of tedious duration and with a stationary condition of catarrhal lung inflammation and solidification, with a feeble dry cough, a steady elevated fever, with much weakness and emaciation, without any favorable variation in the symptoms,—that when *mercury bichloride* and *precipitated sulphur* were given in small doses at two-hour intervals by day and three-hour intervals at night, at the end of the second or third day of this treatment the fever disappeared with a rapid but not critical decline, easy sleep returned at night, and the short, shallow cough became paroxysmal, deep, and moist. The cases first treated in this manner recovered quickly and permanently.

Further use of the mercury-sulphur treatment showed it to be as applicable to croupous as it is to catarrhal pneumonia, and at all ages of life. Apparently its action is to cut short the lung infection in a very short period of time. The patient is observed to respond to the remedy by a speedy decline and cessation of the fever and by a deep and violent cough, with the bringing up of an abundant mucopurulent sputum. In croupous pneumonia, the rusty appearance of the sputum is not very pronounced under this measure, and the expectoration is much less tenacious and gluey on the following day.

The treatment should be steadily pursued for several days. This affords ample time to determine if the patient has reacted favorably and the remedy has accomplished its work. The diagnosis having been correctly made, the state of the heart muscle and valves determined, complications detected if present, and pulmonary tuberculosis, meningitis, purulent pleurisy, and pericarditis excluded, the patient is given *milk* and a *liquid diet* only.

The mercury-sulphur combination is given regularly at two- or three- hour intervals for two or three days. If, when the thirty-second dose is reached, catharsis has not been produced, ½ ounce (15 c.c.) of *castor oil* is given to empty the intestinal tract. Should free purgation and colicky pains result from the mercury and sulphur, the castor oil is equally useful to abate this discomfort.

After the temperature in the evening is normal and recovery begins, the mercury-sulphur mixture is continued for several days longer at four- to six-hour intervals. Should no change in the symptoms and fever appear at the end of the third or fourth day, the treatment has failed, and the cause of this

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will be found in a complication not previously detected or even in an error in the original diagnosis.

The pneumonias should never be treated without topical applications of *heat* or *cold* to the posterior and lateral parts of the thorax. The reasons for this are important. The majority of pneumonias are preceded or accompanied by pleurisy. The chest pain of pleurisy is severe and highly repressive to free inspiration and to coughing. The breathing is thereby made shallow and rapid, the cough impeded,—two states tending to lung congestion and consolidation. The pleuritic pain prevents the patient from lying at ease, and prevents sleep. It is of very limited duration,—a day or so,—and is removed efficiently and safely with *flaxseed-meal poultices* in young children and with *hot-water bags* in older subjects. *Ice-bags* are also efficacious for this purpose. External heat is perhaps the better method, as it is more grateful to the sick. The effects are speedily apparent, particularly in infants,—slower and deeper breathing, freer cough, and quiet sleep.

Acute insomnia is present in most cases. When produced by high fever, chest pain, cough, headache, or feeling of general discomfort it should remain untreated. The elimination of fever is its cure. The sleeplessness is, furthermore, of less moment in this treatment, as sulphur in the small and frequent doses used acts as a gentle hypnotic in the absence of pain. When the insomnia is an early feature of alcoholic mania or delirium tremens, the remedies are digitalis and hyoscine hydrobromide.

Cough is an essential feature of every case of pneumonia that is not a hopeless one. The pneumonic with a cough, however frequent and prolonged it may be, will recover. The pneumonic without cough or with a single, dry, shallow, expulsive effort is in a grave or critical state. Hence any narcotic or sedative drug which produces shallow, rapid breathing and suppresses or represses the cough is harmful and dangerous. The complaints of suffering arising from a severe cough are much more reassuring to the practitioner as regards recovery than the quietude of stupor and cyanosis.

The functional power of the heart must be determined early in the treatment. This is not necessary in children unless a congenital heart defect or a rheumatic endocarditis is found. Where the cardiac contractions are strong, regular, and normal for the degree of fever present, where the valvular mechanisms act harmoniously, no medication is needed. But where valve defects are present, the heart dilated; where the contractions are weak and rapid, irregular or intermittent, *digitalis* in one daily dose may properly be administered from the beginning. The digitalis effect upon the heart, when once established, must be kept up until the patient is fully recovered and convalescence at an end.

The practice mentioned in textbooks on treatment, of aiding the heart action after it has become inefficient, is both theoretically and practically incorrect. A weakened heart may be restored to adequate force and power by the skillful use of the remedy, but the accompanying dangers,—acute dilatation or embolism,—are so great that the result is less certain than when aid and reinforcement are brought up in advance of the time of need.

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The formula of the mercury and sulphur combination used is as follows:—

℞ Hydrargyri chloridi corrosivi ..... gr. ss (0.03 Gm.).
Sulphuris præcipitati ..... 3ij (8 Gm.).
Aquæ destillatæ bullientis ..... f℥iv (120 Gm.).
M. Sig.: Shake and give quickly in the dose of 1 teaspoonful every two or three hours.

The prescription at first sight seems incongruous and incompatible. Even its administration may appear crude and imperfect. The chemical, pharmaceutical, and medicinal properties, however, are positive and correct.

When it is attempted to suspend precipitated sulphur in water, this is found to be almost impossible. The sulphur remains floating upon the surface for many days. Upon prolonged trituration with water in a mortar, a somewhat better suspension on agitation results. It is only when the sulphur is triturated or agitated with very small quantities of boiling water that it becomes homogeneously diffusible on shaking, though on standing it sinks mostly to the bottom. Thus made up it can be dispensed for practical purposes.

The sulphur mixture is neutral to litmus. When the sublimate is added to it, litmus shows a feeble acidity. The sublimate undergoes slow decomposition. Although when the remedy is freshly prepared the mercury salt is ingested as bichloride, which can be readily detected in solution with the ordinary tests for mercuric salts, at the end of a week the liquid shows no mercury in solution. Two grains of sodium chloride preserve the bichloride a much longer time.

This combination has further medicinal peculiarities of its own. Given continuously day and night in the treatment until the desired effect is attained, it does not produce mercurial poisoning, stomatitis, enteritis, or nephritis; for when the gastrointestinal tract has been saturated with it, so to speak, the laxative action of the sulphur begins.

Furthermore sulphur, like potassium iodide, is a reliable chemical antidote in mercurial as well as in lead poisoning.

The possibility of giving the bichloride of mercury in very frequent doses with safety to the human economy with this admixture of sulphur renders the treatment of the pneumonias by this method prompt and efficient, for the germicidal power of corrosive sublimate operates through the blood, without harm to the patient, against the various pathogenic micro-organisms responsible for these inflammations. With germ destruction come cessation of inflammatory exudation; liquefaction, absorption, or expectoration; rapid cessation of fever, and restoration of the respiratory and vascular correlation peculiar to the normal state.

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SORE THROAT AND DIPHTHERIA.*

By HYMAN I. GOLDSTEIN, M.D.,
CAMDEN, N. J.

(*Concluded from the June issue.*)

In *streptococcic sore throat* and cases of *severe follicular tonsillitis* the measures I adopted may be summarized as follows:—

1. The early use of mixed streptococcic vaccine subcutaneously has given me remarkable results. Antistreptococcic serum may also be used, but this is better resorted to where the condition becomes generalized.

Antistreptococcic serum contains antibodies, and therefore when the condition of the patient is such that he cannot produce his own antibodies this antiserum should be used. But where the condition is only localized, as in these cases of sore throat (except septicemic cases and cases of diphtheria), we do not need the antiserum, and get the best results from a *bacterial vaccine.* This does not contain antibodies: the patient supplies his own antibodies. The vaccine simply stimulates the organism to produce an extra supply of antibodies, thus enabling him to resist the disease. The ones used were Schieffelin's mixed vaccine and the Van Cott combined vaccine. What the differences are between the bacterins (vaccines) and the antiserum are probably well known by all and need not be further gone into here.

2. A solution of silver nitrate, 80 grains to the ounce, is applied to the tonsils once or twice daily. At times a stronger solution may be used.

3. A mild antiseptic gargle, to be used every two hours or oftener, is prescribed.

4. Fractional doses of calomel, until free catharsis occurs.

5. Ice-bags to be applied as needed.

6. Salicylates and Dover's powder, to reduce temperature and quiet pain.

7. Plenty of liquids—water, milk, lemonade.

8. Of late, I have been using acetylsalicylic acid (aspirin) both locally and internally. In 1906 C. F. Kieffer[2] called attention to the efficacy of aspirin locally applied to the tonsils in acute follicular disease. Before applying the aspirin, it is advisable to remove as much of the exudation and mucus as possible; for this purpose a weak solution of sodium bicarbonate, or Dobell's solution, may be mopped over the patches to clear them away. After the tonsils have been cleansed, finely powdered aspirin is applied to them on a moistened piece of cotton held on an applicator. The powder can also be applied by means of an insufflator.

Before any local applications to the tonsils are made I always take a smear from the throat and have it examined for micro-organisms, diphtheria bacilli,

* Read before the Camden County Medical Society, Dec. 10, 1912.

[2] American Medicine, Sept., 1906.

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etc. Should the case be a severe one, I administer a prophylactic dose of antitoxin while waiting for the laboratory report.

DIPHTHERIA.—The symptomatology of this disease is so well known that it need not be dwelt upon. I desire to point out, however, several facts which may be of assistance in the diagnosis and treatment.

In 1911 Conradi and Bierast,[3] as a result of personal studies, concluded that in about one-third of all cases of diphtheria virulent bacilli reach the *urine* and are often in a position to *propagate the infection*. The urine of diphtheria patients should be disinfected, therefore, as long as it is infected, or as long as infection is possible. Delbanco and Haas[4] have recently published an article on anal diphtheria, in which they call attention to the fact that both diphtheria and leprosy may be disseminated by means of the feces and urine, and that consequently it is imperative to disinfect the excreta in these diseases.

As to the determination of the presence of diphtheria bacilli, Conradi and Troch[5] described a new culture medium for the isolation of the organism. This is briefly as follows: 10 Gm. of meat extract, 5 Gm. of sodium chloride, 20 Gm. of peptone (Witte), and 6 Gm. of calcium acetate are added to 1000 c.c. of water. The mixture is placed over the water bath for one-half hour and filtered. The filtrate is slightly acid and 1 per cent. of grape-sugar is added to it. One part of this mixture is added to three parts of fresh sterile blood-serum, and to 100 c.c. of this blood-serum mixture 2 c.c. of a 1 per cent. solution of *potassium tellurite* are added. The mixture is then shaken and distributed in Petri dishes. The mixture is allowed to congeal and is then ready for use. The original culture of the suspected material is made on Löffler's blood-serum. This is incubated for three hours at 35° C. and then a culture is made from it on the tellurium plate. This plate is incubated for twenty-four hours at 35° C., and the original Löffler plate may be allowed to continue to grow for eight hours. If diphtheria bacilli are not shown on the Löffler cultures, one may still be able to find them on the tellurium cultures—thus avoiding mistaken diagnoses. This method avoids much delay in sending repeated specimens and through incorrect reports of the presence or absence of true Klebs-Löffler bacilli. Prolongation of the quarantine is thus also avoided, as pseudodiphtheria bacilli cannot be mistaken for true Klebs-Löffler germs. The diphtheria colonies will be colored black, the result of a reduction of the tellurium dioxide. Even the diphtheria bacillus itself contains unmistakable black spots.

In *treating* a case of diphtheria, one should be certain that it *is* diphtheria and not a severe case of streptococcic tonsillitis. In my estimation, many cases of sore throat reported as diphtheria (without culture reports) are in reality streptococcic infections of the tonsils. It is in these cases that diphtheria antitoxin brings no improvement and one is often disappointed.

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[3] Deutsche medizinische Wochenschrift, August 22, 1911.

[4] *Ibid.*, November 12, 1912.

[5] Münchener medizinische Wochenschrift, July 23, 1912.

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Here antitoxin is not required, as the condition is a local disease due not to Klebs-Löffler germs, but to streptococci, etc., and one should promptly resort to the use of mixed bacterins. In cases where the diphtheria germs are present, one should never be slow in using large doses of antitoxin. "The only harm, in the use of antitoxin, is in not giving enough." Recently, I had occasion to see a baby 15 months old, which on examination was observed to have nasal, pharyngeal, and laryngeal diphtheria of the worst type. The child had been ill for five or six days. I immediately injected 15,000 units of antitoxin, and repeated the dose during the next twelve or fifteen hours. Upon seeing the case again an hour after the first dose, I decided upon intubation, which Dr. Levi B. Hirst did without difficulty. The child showed signs of improvement in ten or fifteen hours,—truly a wonderful example of what diphtheria antitoxin can do. This baby received in all about 36,000 units of antitoxin.

The important points in the treatment of diphtheria are:—

1. The early and free use of antitoxin. William H. Park, at the New York Academy of Medicine, November 7, 1912, recommended the use of a single large dose of antitoxin to be administered intravenously, especially in severe cases.

2. Disinfection of the urine and other discharges.

3. Intubation to be practised early, if it is indicated at all.

4. Treatment of cardiac failure.

5. The use of *Staphylococcus aureus* suspensions (Schiotz), in cases where Klebs-Löffler germs persist in the throat.

The treatment of *cardiac failure* resorted to by me in cases of diphtheria is as follows:—

1. The head is kept low, to prevent cerebral anemia.
2. The foot of bed is elevated.
3. The patient is kept warmly clad.
4. Hot-water bottles are placed in the bed.
5. Nutrient enemata are administered as required.
6. The following combination is given hypodermically every four hours:—

℞ Atropine sulphate	1/100 grain (0.0006 Gm.).
Strychnine sulphate	1/60 grain (0.001 Gm.).
Adrenalin chloride sol. (1: 1000)	5 minims (0.3 c.c.).
Water	5 minims (0.3 c.c.).—M.

7. Thirst is quenched by the administration of normal saline solution twice daily. Teaspoonful doses of iced water are allowed.

8. Precordial pain is relieved by the frequent application of hot fomentations.

9. Constipation is combated by small quantities of glycerin and water used as enemata.

10. Absolute quiet is insisted on.

Finally, I would like to refer to measures carried out for the removal of the diphtheria bacilli from the throat of patient and diphtheria carriers,

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the Board of Health being thus enabled to remove the quarantine without unnecessary delay. M. L. Holm[6] reports having employed the normal bacterial flora from the mouths of healthy individuals for this purpose. He inoculated a sterile swab from a normal mouth and rubbed it over the mucous membrane of the oral cavity and pharynx of the carrier. No mouth-wash should be used for at least six hours, and after the application of the bacteria no antiseptic washes of any kind are to be employed. The danger of this method is, of course, the transference of other infections. On this account it is preferable to use cultured bacterial suspensions. This has been done, and several reports have been made on such a procedure by Schiotz, W. F. Lorenz, M. P. Ravenel, G. B. Blake, and others. Lydia M. DeWitt[7] carried out an extensive series of experiments on animals. Of 32 animals inoculated with diphtheria and afterward treated with a staphylococcus culture, a number very quickly became free of Klebs-Löffler germs. The staphylococcus suspensions should be applied in spray form, and *negative cultures* for diphtheria may be obtained within one week. The preparation recommended is a fresh suspension of the *Staphylococcus pyogenes aureus* in normal saline solution or a bouillon culture about twelve hours old. An amount is used which is sufficient to produce a "dripping-wet" condition of the pharynx and nasal cavities.

DIPHTHERIA IN CAMDEN.—The following is a list of the cases of diphtheria and deaths reported to the Camden Board of Health in some of the later months of 1912:—

	Cases.	Deaths.
August	11	1
September	73	5
October	67	10
November	67	6
	218	22

Mortality: 10 per cent.

CONCLUSIONS.—1. The local Board of Health should exert all means to establish a local laboratory of hygiene.

2. The Municipal Hospital should be opened without delay.

3. The Board of Health should be in a position to supply free antitoxin in unlimited quantities, if needed, to persons unable to pay.

4. Good results are obtained from the use of bacterial vaccines in acute septic tonsillitis.

5. Overriding diphtheria bacilli with staphylococci removes them from the throat.

6. The urine contains diphtheria bacilli in 33 per cent. of the cases. We should therefore instruct persons to disinfect all discharges from diphtheria patients, including the urine.

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[6] Journal of the Michigan State Medical Society, June, 1912.

[7] Journal of Infectious Diseases, January, 1912.

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7. Tonsillitis is an infectious disease,—very often streptococcic,—but is *not contagious.*

8. The usefulness of the new method of Conradi and Troch for the determination of diphtheria bacilli should be recognized and the procedure further investigated.

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Cyclopedia of Current Literature

ANESTHESIA, ABDOMINAL RIGIDITY DURING.

Discussing first the causes of such rigidity, the author refers to the fact that the presence of food or much fluid in the stomach sets up persistent straining. Faulty anesthetization, *e.g.,* failure to choose an anesthetic appropriate to the patient, operation and position, uneven or too hurried induction, unduly light anesthesia, etc., may be expected to cause trouble. Acute appendicitis or a gastric ulcer might also be the cause of rigidity. Certain positions, *e.g.,* on the side with a large, round supporting cushion, or even the ordinary recumbent position, with or without an elevating cushion, will promote abdominal tension. The Trendelenburg position not only causes some tension, but also disturbance of the respiration by impeding the action of the diaphragm. Traction on the mesentery or broad ligaments, enucleation of an adherent prostate, injection of a bladder ulcerated from tuberculosis, are especially likely to cause trouble. Finally, hiccough may begin by manipulation in the region of the diaphragm.

For prevention of abdominal rigidity during anesthesia, means should, when practicable, be taken to get the stomach empty and keep it empty, particularly in emergencies and when there is intestinal obstruction.

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With the patient in the supine position, the shoulders, if this be not inconvenient to the surgeon, should be raised —the one from which the head is turned rather more than the other. In the lateral position the uppermost arm must be supported on a rest. In the Trendelenburg posture the shoulders should always be supported, and the weight of the head taken off as much as possible by one or two pillows, which may sometimes with advantage rest on the anesthetist's knees.

Spinal analgesia usually abolishes the trouble, besides keeping the bowels still, and is especially useful for this purpose in some pelvic operations. It should, however, be combined in most cases with general anesthesia, which may be light when it would otherwise need to be deep.

After hypodermic injection of omnopon or morphine and atropine the author has often found absence of reflex rigidity, *e.g.*, in hysterectomies, where it might otherwise have been expected. It is worth while to inject (if previously omitted) just after induction or even at the onset of rigidity, for an effect generally follows in about ten minutes. The patients will, of course, need careful watching after the operation.

Ether by the open method or a chloroform and ether mixture (according to the state of the patient and the stage of the operation) are usually more effectual than pure chloroform, and can be pushed with less risk. Whatever anesthetic be employed, it is of the first importance to attend to the respiration, and, if this becomes unsatisfactory, to apply the appropriate remedy. Oxygen is often valuable, but should not be used merely to counteract cyanosis dependent on causes otherwise remediable. Thus, one should not give ether from a closed inhaler to a full-blooded, elderly person, and then turn on oxygen to alleviate its bad effects.

Reflex rigidity from surgical procedure is accompanied by more or less spasmodic closure of the larynx and retraction of the tongue, and efforts must be made to maintain a free airway by such means as pushing forward the lower jaw, keeping out the tongue, and introducing a tube between the tongue and palate. Non-aëration increases rigidity, the extraordinary muscles being called into action, so that a vicious circle is formed. The depth of the anesthesia must be cautiously increased. Reflex disturbances should, of course, be minimized by making an adequately long incision, by clamping and cutting adhesions when possible instead of tearing them, and by avoidance of rough handling. J. D. Mortimer (Clinical Journal, March 19, 1913).

BURNS, TREATMENT OF.

If the patient remains shocked and cannot stand anesthesia, the author applies a saturated watery solution of picric acid on the lint, and covers this with protective, to prevent evaporation. The next day the protective is lifted and more picric acid is poured over the lint, which is not changed, but left in position. On the third day the patient is either obviously going to succumb or, having responded to the treatment for shock, can stand an anesthetic. There is no justification for leaving picric acid on longer than two days, where the patient can stand an anesthetic. The picric acid method is not a satisfactory one, and is used only in the absence of a better method for the shocked patient.

If the patient's condition permits of safe anesthesia (chloroform being preferred), then the burns are cleaned up with 70 per cent. alcohol. Exclusion of

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water is essential. With sterile gauze wrung out of alcohol the whole surface of the burn, together with the surrounding skin area, is rubbed vigorously. The blisters are rubbed off, together with all dead tissue. After thorough cleansing, a dressing of sterile gauze wrung out of 70 per cent. alcohol is applied. Dry gauze and wool is placed over this, and the dressing bandaged on.

The dressing must be done daily, under anesthesia. The parts are rubbed, not wiped, and dressed with alcohol as before. The dressing, when removed, sticks to the surface of the burn, and by pulling it roughly off, bits of dead tissue are satisfactorily removed. The daily dressings are continued for about eight days, when those burns short of destroying the whole skin thickness are found to be in such a clean state that boroglyceride gauze dressings or gutta-percha tissue can be applied without pain. The burns now heal under the boroglyceride with striking rapidity. If they become infected again, one clean up with alcohol, followed by one alcohol dressing, will put them in their former aseptic state.

Burns involving the whole skin thickness take longer on account of the sloughs. These become black under the treatment, dry and shrivel up, and can be torn off or dissected off with a sharp scalpel and forceps. Valuable time is lost waiting for the sloughs to separate. With the alcohol treatment, nothing but the best results have followed the cutting off of the slough, for the surface is aseptic and the sloughs are not sodden, but dry; sepsis is therefore out of the question. A scalpel must be used, for it leaves with a clean cut no microscopic track of dead and injured cells such as a scissors does.

Often, with this treatment, too much alcohol will be absorbed. This is remedied by applying one thin layer of gauze well wrung out of alcohol over boroglyceride gauze applied next to the burn, after having rubbed the burn with alcohol. E. T. C. Milligan (Australian Medical Journal; Urologic and Cutaneous Review, February, 1913).

CALOMEL, A PECULIAR CASE OF POISONING BY.

A child 2½ years of age, suffering from a mild attack of grippe, was given by mistake a 0.3-Gm. (5-grain) cachet of calomel instead of a 0.2-Gm. (3-grain) cachet of antipyrin. No untoward manifestation was noted, and the mistake made was not realized until five hours later, when, immediately after the child had been given to drink ¼ of a glassful of Vichy water, she was seized with convulsions, the head being extended, the eyes turned up, and the arms stretched out on the bed with the fists clenched and executing clonic movements. The spasms ceased after four or five minutes, and the breathing, previously jerky, simultaneously stopped. The face became violet, foam appeared on the lips, the head sank to the side, and the extremities became limp. The pulse could not be felt. Sylvester's method and rubbing with vinegar resulted in a return of the circulation and respiration within five minutes, but consciousness was not regained and the eyes remained fixed for an hour after.

A large glycerinated enema brought about abundant evacuation of formed yellow feces and a diminution of the abdominal distention previously present. Later, vomiting of glairy material took place, and two copious evacuations of greenish-yellow, extremely offensive material occurred. On the succeeding two days, fever, slight cough, and evanescent

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disseminated râles were noted. The treatment consisted of antipyrin and quinine, tincture of iodine and cotton wrapping externally, and later syrup of cinchona. Rapid recovery followed.

This child had never had convulsions before; nor did she have any in the two years after the calomel and Vichy adventure. The disturbance seems to have been caused through an immediate reaction taking place between the sodium alkali in the Vichy water and the calomel, the latter having been taken five hours before and become more or less altered during its sojourn in the digestive tract. H. Spindler (Presse médicale, April 26, 1913).

DIABETES MELLITUS, EFFECT OF NITROGEN FEEDING ON CARBOHYDRATE ASSIMILATION IN.

Answers to the following questions were sought by the authors: (1) Does nitrogenous alimentation in general have any influence on the carbohydrate coefficient? (2) Is there a difference in this regard between animal nitrogenous food and vegetable nitrogenous food? (3) Among the vegetable nitrogenous foods, are there any having a special influence?

The tests were conducted on 17 patients, of whom only 8 were considered irreproachable for tabulating results. The procedure followed was, in brief, while keeping the intake of carbohydrates constant, to ascertain the effect of meats, soy bean, lentils, dried beans and potatoes on the glycosuria. By high nitrogen feeding is meant the ingestion, generally, of 100 to 120 Gm. of proteins daily, though in a few instances the amount was carried up to 180 and 210 Gm.

The results obtained are summarized as follows: (1) High nitrogen feeding in the form of meat frequently lowered the coefficient of carbohydrate assimilation and increased the glycosuria. (2) High nitrogen feeding in the form of vegetables did not always have a constant effect of the same nature as in the case of the meats. (3) There seems to be a difference between animal and vegetable albumins in regard to their action upon the carbohydrate assimilation coefficient. (4) The action of the different vegetable albumins appears to vary in different patients and does not depend upon the nitrogen content of the albumins given. In some cases a diet relatively poor in nitrogen brought about a more marked glycosuria than a heavily nitrogenous (soy flour) diet, while in others the opposite effect obtained. F. Rathery and Liénard (Bulletins et Mémoires de la Société médicale des Hôpitaux de Paris, May 16, 1913).

DIABETES MELLITUS IN THE ELDERLY, TREATMENT OF.

Diabetes occurring in elderly persons presenting symptoms of arteriosclerosis is in all likelihood, the author maintains, due to sclerotic changes in the vessels of the pancreas.

In 3 cases, aged respectively 66, 52, and 62 years, in which notwithstanding rigid dieting the sugar would not disappear from the urine, very favorable results as regards the glycosuria and general condition were obtained by iodine medication. In the first two patients the use of iodine had been suggested by high blood-pressure and by asthma, respectively. Although in each dieting had not diminished the glycosuria below 4 per cent., the iodine caused complete disappearance of the sugar within two and three weeks. Freedom from sugar in these cases had not been observed for a long time before.

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In the third case the iodine treatment was tried for no other reason than the favorable results noted in the two preceding cases. Notwithstanding a strict diet, the glycosuria had remained at 3 per cent. One week after the beginning of iodine treatment it was but ½ per cent., and the patient's nervousness and insomnia were much improved. Two weeks later there was but 0.2 per cent. of sugar.

In each of these cases the diet was the same after as before iodine medication had been instituted. The preparation administered was sajodin, of which 3 tablets, each of 0.5 Gm. (7½ grains), were given daily, one hour after meals. The benefit yielded in these cases is ascribed by the author to a favorable effect of the iodine on the arterial circulation of the pancreas, which caused an increase in the antiglycosuric power of this gland. Iodine treatment seems indicated in cases of diabetes in elderly persons. A. Lorand (Journal des Praticiens, April 12, 1913).

DIPHTHERIA, ANTITOXIN ADMINISTRATION IN.

The author is decidely of the opinion that, in cases of malignant diphtheria, antitoxin should be given by the intravenous method. The difference, during the first day, in the amount of antitoxin in the blood when injected intravenously and when injected subcutaneously, is very great. At the end of six hours, one has, with a suitable amount, by the subcutaneous method, 2 units, and by the intravenous method, 20 units, in each cubic centimeter. As the hours pass, the one diminishes and the other increases; but even at the end of twenty-four hours there is as 12 against 6 units. The author feels certain that 5000 units intravenously have as much effect as 20,000 given subcutaneously. Intravenous injections of refined antitoxin have been given by him and his co-workers on Ward's Island, New York City, in nearly 200 cases, and have produced no bad results. A large number of children and adults were given other serums intravenously in large amounts, and there was but 1 patient who showed bad symptoms.

In little children one must cut down on the vein, but with adults and larger children it is a very simple method. The serum must always be warmed to blood heat before injecting. In all cases of septic diphtheria one should give a dose intravenously; but in mild and early cases it is sufficient to give it subcutaneously. Intramuscular injections are absorbed in about one-half the time required by the subcutaneous ones. Park (Boston Medical and Surgical Journal, January 16, 1913).

FIXATION ABSCESSES.

The procedure referred to by the author consists in injecting into the cellular tissue 15 minims (1 c.c.) of spirit of turpentine. The areas of choice for the injection are the side of the thigh, the lumbar region, or the deltoid region. Prompt appearance of evidences of pronounced inflammation at the point of injection is a good sign, and a seeming tendency toward the development of a widespread phlegmon may be looked on with complete equanimity. In fact, the phenomena of the original infection disappear precisely at this time.

Where there is little or no reaction after twenty-four hours, another injection may be given in a different area. As a rule, a fixation abscess attains its maximal development on the fifth or sixth day after injection. Provided the procedure has been carried out aseptically, the resulting pus is sterile, and

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early incision is unnecessary. Absence or weakness of the reaction indicates insufficiency of the body's mechanism of defense, and implies an unfavorable termination. J. Carles (Journal de médecine de Bordeaux, January 5, 1913).

GASTRIC CANCER, BONE-MARROW METASTASES AND ANEMIA IN.

In any case of gastric cancer with grave anemia the presence of pains and tenderness of the bones should always arouse suspicion of carcinoma of the bone-marrow. If the blood on examination shows characters suggestive of pernicious anemia, but with an excess of erythroblasts and myelocytes, the diagnosis of metastases in the bone-marrow is highly probable. The authors report a case which seemed to show that even in the absence of evidence of a myeloid reaction, if there be any suspicion of carcinoma of the stomach, high-grade anemia, with high-color index and megalocytosis, taken along with the presence of bone-pains, renders the diagnosis of bone-metastases almost certain. A. W. Harrington and A. M. Kennedy (Lancet, February 8, 1913).

GASTRIC ULCER, TREATMENT OF.

Atropine in gastric ulcer quiets pain and diminishes pyloric spasm. It is especially in the acute cases that the remedy is of service. An injection of ¼ mgm. ($\frac{1}{256}$ grain) should be administered three times the first day, then 1 mgm. ($\frac{1}{64}$ grain) given in 2 doses on the second day, then 1½ mgm. ($\frac{1}{42}$ grain) divided in three doses daily for ten to twelve days. Within four to five days the attack is arrested, food is tolerated, the patient regains weight, and conditions are rendered much more favorable for operative intervention. Mathieu and Giraud (Société de Thérapeutique, Paris; Paris médical, May 24, 1913).

GASTRIC ULCER, TREATMENT OF PERFORATED.

While the best local treatment for a perforated gastric or duodenal ulcer is to close it by suture, and the abdomen with drainage, there can be no doubt that one of the first difficulties which a surgeon meets in these cases is to close the ulcer soundly and satisfactorily. The reason is that the stitches cut through the sodden, swollen tissues in which they have to be inserted to close the perforation. One cannot but surmise that many perforations deemed to be closed satisfactorily at the operation are not so an hour or two later. In spite of this, patients who have been operated upon continue to recover. Hence there is a justifiable suspicion that cases of perforated gastric or duodenal ulcer can recover when the perforation is not closed, or at least imperfectly closed.

Since 1908 the author has used the principle of isolating, but not closing, the ulcer on 15 occasions, including one perforation on the posterior abdominal wall. In 2 of these the end of a gauze plug was held by a catgut stitch in the aperture of the perforation. These patients have done uniformly well. As a rule, the longer the time spent in suturing the perforation, the greater the insecurity of the closure. Isolation of the perforation by tamponade has the advantage of being simple and of saving valuable time. No patient on whom it was done ever needed a primary or a secondary gastroenterostomy. No patient had a gastric fistula or has in any way, as by delayed convalescence, showed signs of non-closure of the ulcer. When the perforation is not sutured the end of a

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gauze drain is always placed next the ulcer, and brought out of the wound. This drain is removed in about thirty-six hours under anesthesia with nitrous oxide gas and not replaced. After operation the patient is placed in the Fowler position, saline solution is administered rectally and continuously, and nothing but water is given by the mouth for three days. Recently it has been the author's practice to enclose the isolating tampon of gauze in a longitudinally split-rubber tube, a cigarette drain, part of which is left in position after the removal of the gauze.

Having shown the practicability of the successful isolation of a perforation with a gauze tampon, the author suggests that at first an attempt be made to close the perforation by suture. If this fails or appears to afford a doubtful closure of the perforation, no further time should be spent on it, but the ulcer be plugged and drained. The author believes that the isolation of these ulcers by tampon will become the first and most popular line of treatment except in cases operated upon very early after perforation. E. M. Corner (Lancet, March 1, 1913).

GASTROPTOSIS, TREATMENT OF.

The following diet has been found satisfactory by the author for the majority of cases of gastroptosis:—

8 A.M. Cocoa, cereal with cream and sugar, chopped beef with toast, or soft-boiled eggs, roll, butter, and a little marmalade.

11.30 A.M. Crackers with some preparation of fermented milk (lactic acid).

1 and 7 P.M. Fish or chicken or bird, bread and butter, one starchy and one green vegetable, farinaceous dessert such as cornstarch, farina or rice pudding, glass of milk.

4.30 and 9.30 P.M. A sandwich, or the remains of the farinaceous pudding, or junket or malted milk.

During the day the patient takes one-half pint of rich cream. No fruit is allowed and no red meat, except that prescribed for breakfast. As soon as the patient is able to take this without discomfort, the caloric value of the diet is increased by using more cream and butter.

Some form of abdominal supporter is recommended. If one is dealing with a flat or retracted abdomen, the adhesive plaster belt (either that of Rose or one of its modifications) is applied. If the abdomen is pendulous or prominent, an ordinary elastic belt will suffice. In either case care is taken to apply it in such a way that the line of maximum pressure is just above Poupart's ligament and the iliac crests.

Before breakfast or before the forenoon lunch, a spinal and abdominal spray of hot and then cold water is given, followed by a brisk purge, except in those cases wearing the adhesive plaster belt.

Exercise is not allowed in the beginning. Special exercises are ordered to develop and strengthen the abdominal muscles.

Intragastric electricity and the high-frequency current do good in many cases.

The drug treatment is symptomatic. As soon as patients show symptoms of indigestion, bad breath, eructations, gaseous distention, indicanuria, or abdominal discomfort, it is controlled by the use of calomel, castor oil, duodenal irrigations (normal saline), colon irrigations (ichthyol solution, 1 dram to the quart), lavage (salicylic acid 20 grains, boric acid 1 dram, water 1 quart), lactic acid cultures, intestinal antiseptics, or perhaps one of the vegetable ferments. A tonic is usually prescribed

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unless there is reason to believe that it will interfere with digestion.

Cases in which the vitality is not too much impaired usually do very well under this treatment. Others do better if taken away from their friends and placed in an institution where the food is specially prepared for the individual case. Under these conditions the caloric method of feeding is used. A liberal diet is prescribed unless it is limited by abnormalities of gastric secretion, but soups and broths, fruits and berries, most of the green vegetables, the starchy vegetables which are particularly prone to ferment, fresh breads, the meats which are most difficult of digestion, rich desserts, and usually alcoholic stimulants, are to be ruled out.

For the first three or four days the patients are kept on a very light diet and are given calomel, salines, castor oil or colon irrigations, after which they are started on about 1800 calories daily. Later, 3000 calories are made the minimum amount, and from day to day the diet is increased, as the condition of the patient indicates.

The need of medication increases with the increased quantity of food, but, by careful watching, the diet can be forced for some time without trouble. Massage is practised with particular attention to the abdomen. Hot poultices or compresses during the active stage of digestion enhance abdominal circulation and diminish discomfort. Injections of some soluble form of iron, or gylcerophosphates, are given.

It is seldom necessary to continue this *régime* for more than four to six weeks. Later it is advisable to keep the patients under observation for a long time, as they are apt to relapse as a result of work, worry, and dietetic errors.

Occasionally, in stubborn or relapsing cases, the advisability of surgical treatment has to be considered. The operation of gastropexy has its legitimate field of usefulness and some remarkable results have been obtained with it.

The author reports a case illustrating the benefit sometimes derived from the Beyea operation of shortening the gastrohepatic and gastrophrenic ligaments. E. L. Kellogg (International Journal of Surgery, December, 1912).

HEMORRHAGE IN HEMOPHILIA, TREATMENT OF.

Pressure, epinephrin, gelatin, and even serum therapy are sometimes powerless to arrest hemorrhage in cases of hemophilia. In 2 such rebellious cases, the author employed the thermocautery with success.

The first patient was a male child, 18 months old, who, after having repeatedly presented manifestations of hemophilia, was taken, by reason of a slight traumatism, with hemorrhage from the gums which perchloride of iron, gelatin *per os* and by injection, and horse serum failed to relieve. When, after the hemorrhage had continued several days and the child seemed moribund, the thermocautery was finally resorted to, the flow of blood at once ceased, and later did not recur. To activate the regeneration of blood two injections of 15 and 10 c.c., respectively, of human serum were administered, and the little patient soon recovered.

The second case was that of a male child of 27 months, presenting a tendency to frequent hemorrhages, especially from the lower limbs and inferior parts of the trunk, in the form either of petechiæ or of hematomata in the subcutaneous cellular tissue. As the result of a fall he had developed hemorrhage

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from the gums, which resisted a large variety of measures and did not spontaneously cease until the eighth day. Nine months later, while playing with a sharp piece of tin, the child cut his right thumb. Pressure failing to arrest the flow of blood, the thermocautery was used, with an immediate successful result. H. Hahn (Semaine médicale, May 28, 1913).

HERNIA, RESULTS OF FILIGREE IMPLANTATION IN.

The author's cases of hernia of all varities, excepting femoral hernia, done since the introduction of filigree implantation number 314,—263 inguinal and 51 umbilical or ventral. Of the inguinal cases, 106 were treated by filigree implantation, and of the umbilica-ventral, 40. Some patients had undergone repeated operations ineffectually, and many had been refused operation more than once; 11 were over the age of 60, the 2 oldest being 72 and 67, 27 between 50 and 60, and 48 between 40 and 50, the remainder being under 40.

Though some of the hernias were of vast dimensions, in all the cases there were but two recurrences, both in cases of inguinal hernia. A filigree implanted and resulting in a primary union is, after a short time, so absolutely incorporated with the tissues that it can only be removed by excision *en bloc,* or by extraction of its wires one by one.

Among the 40 ventral cases there were four deaths: one from bronchopneumonia, one from pulmonary embolism, one from cardiac failure, and one from ileus. All were in very stout patients. Among the inguinal cases there was one death, which was due to ileus. This case had only been done at the urgent request of the patient, who realized the grave risk he was incurring.

The author concludes that few, if any, hernias, whether inguinal or ventral, can now be considered incurable. In filigree implantation is to be found the only true radical cure (for the severe cases). The use of filigree is attended by a slight increase in the danger of sepsis, but suppuration is not an indication for the removal of a filigree. Wires displaced into a sinus should be removed without disturbing the filigree. No belt or truss should ever be applied on the top of an implanted filigree. For the reduction of very large inguinal hernias and the avoidance of paralytic ileus the Trendelenburg position should be used, the abdomen opened, and the bowel withdrawn from within, aided by pressure from without. In ventral hernias following appendicular abscess it is absolutely essential that the appendix be removed before implantation, if this has not been already carried out. It is important in dealing with a gigantic hernia that every precaution should be taken for the comfort and safety of the patient. There must be skilled assistance, full facilities for asepsis and a good light; for choice, spinal analgesia should replace general anesthesia. Lawrie McGavin (Proceedings of the Royal Society of Medicine, January, 1913).

INFECTIOUS DISEASES, ORAL TREATMENT IN.

On equal footing with therapy and diet in infectious diseases, if not in advance of them, should come the minutest instructions relative to the care of the mouth. The nurse or attendant should be directed to cleanse the teeth of the patient at least twice daily and to rinse or swab out the mouth before and after each feeding with a stimulating alkaline

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antiseptic solution. By following this course rigorously in all cases of serious illness one will be many times repaid in observing how few are the complications, how seldom signs of self-infection appear, and how gratefully the treatment is received by the patient. The food tastes better, the appetite continues to be good, and assimilation is carried on at the highest rate possible. C. E. Field (Medical Record, February 8, 1913).

KIDNEY INFLAMMATION, DIAGNOSIS OF.

The author describes a kidney reflex (muscle spasm) which he considers of diagnostic value. It is elicited by placing the patient on a comfortable stool or chair so that his feet are flat on the floor. He is then instructed to sit erect, but relaxed, so that the lumbar muscles are not put on a stretch. These muscles are now examined by light palpation. Any difference in tension should be observed. If one kidney is the seat of an inflammatory process, the muscles on that side will be firmer than normal to the touch. It is often plainly visible that the muscles on the affected side are larger and stand out more prominently than the corresponding muscles on the other side. The muscles being examined, as well as those with which they are being compared, must be relieved of all tension, otherwise errors will creep in.

With this reflex, one has at a glance a suggestion that a kidney may be inflamed, or the seat of a stone or a tuberculous process or some other inflammation. In renal tuberculosis, when operation is considered, the sign will prevent the disaster which sometimes occurs when, after one kidney is removed, it is found that the other one is also involved. No kidney should be removed for tuberculosis, except as a life-saving measure, if the lumbar muscles on the other side are the seat of spasm. F. M. Pottenger (Journal of the American Medical Association, March 29, 1913).

LARYNGITIS, RELIEF OF DYSPHAGIA IN TUBERCULOUS.

The following procedure is employed by the author: There is placed, or the patient places himself, on the tongue 0.3 to 0.4 Gm. (5 to 6½ grains) of an absolutely dry powder of orthoform or anesthesin. A few movements of deglutition, performed without previous admixture of saliva with the powder, cause the latter to descend to the level of the epiglottis and arytenoepiglottidean folds. On its way it comes in contact with the infiltrated areas or ulcerations covering the entrance to the larynx, and in a few minutes the patient is able to swallow without distress. Where the ulcers are in the interior of the larynx, however, the measure is not so effectual. The dose referred to can be repeated three or four times daily for several weeks without any inconvenience. The procedure is also recommended for cases of quinsy and after operations on the tonsils. Hinsberg (Journal de médecine et de chirurgie pratiques, March 10, 1913).

LEUKEMIA, BENZOL TREATMENT OF.

The author reports 2 typical cases of myelogenous leukemia that were greatly improved by benzol. In the first, X-ray treatment had been without effect, but benzol in doses of 60 drops a day caused a slow but continued betterment in the general condition, splenic enlargement, leucocytosis, myelemia, and anemia. In the second patient, previously untreated, benzol in the same dose brought about in two weeks a considerable improve-

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ment in the general state, with suppression of fever, diminished volume of the spleen, and fall in the leukemia from 300,000 to 80,000 cells. The action of benzol is comparable with that of the X-rays; the two methods, far from excluding one another, appear destined to be mutually complementary and to be employed in combination. Aubertin (Bulletins et Mémoires de la Société médicale des Hôpitaux de Paris, May 23, 1913).

MENINGES, PERMEABILITY OF, TO ARSENIC.

In view of the usual inefficiency of specific treatment in chronic syphilitic meningitides as compared with its frequent efficacy in the acute or subacute forms, it suggested itself to the authors that this difference might be due to variations in meningeal permeability. It was first ascertained experimentally that arsenic does not pass into the cerebrospinal fluid in the rabbit unless an artificial meningitis has previously been established. Investigations were then conducted on human syphilitic cases. In each, 5 c.c. of cerebrospinal fluid was removed about six hours after an intravenous injection of 0.9 Gm. of neosalvarsan.

It was found that while the permeability of the meninges varied a great deal, the variations seemed to correspond to the intensity of meningeal inflammation, as indicated by the extent of lymphocytosis. Absent or only very slight in most cases of chronic meningitis (tabes, general paralysis), the permeability was greater in the subacute forms of meningitis.

The authors sought, furthermore, to facilitate the passage of arsenic into the cerebrospinal fluid by causing artificially an exacerbation in the latent inflammatory reaction of the meninges in tabes and general paralysis. This was effected by injecting subcutaneously 10 c.c. (2½ drams) of a 1 per cent. solution of sodium nucleinate, which caused a marked increase in lymphocytosis, fever, and sometimes paroxysms of "lightning" pains. Thus by systematically injecting the nucleinate in conjunction with neosalvarsan, the passage of arsenic into the cerebrospinal fluid is favored. The resulting attacks of pain, sometimes more severe than those following an injection of neosalvarsan alone, gradually disappear after repetition of the injection of the arsenical drug, and between these attacks periods of remarkable improvement of the patient are often noted. Similarly, massive intravenous injections of a soluble mercurial salt very often induce a marked febrile reaction, pronounced leucocytosis, and intense lightning pains, likewise followed by striking improvement. J. Tinel and J. Leroide (Société de Biologie, Paris; Semaine médicale, May 28, 1913).

NEOSALVARSAN, ADMINISTRATION OF.

A simple apparatus for the administration of neosalvarsan is described by the author. Into a 220-c.c. Erlenmeyer flask, upon which one has scratched with a file a 100-c.c. mark, empty the ampoule of neosalvarsan. Add 100 c.c. of *freshly* distilled cold water; agitate gently until a perfect solution results, then insert a rubber stopper with two small holes, into one of which a piece of glass tubing is inserted, long enough to project above the surface of the solution when the flask is inverted, serving as an air-vent. In the other opening is a short section of glass tubing, projecting externally sufficiently to attach a piece of rubber tubing three feet long, near the outer end of which is inserted a short

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section of glass tubing for the detection of air-bubbles. The flask may be held by someone or fastened to a clamp, or an ordinary metal towel rack. Any good needle of sufficient lumen is plunged into the vein, the site of puncture having been sterilized with absolute alcohol, and all air-bubbles having been expelled; while the blood and the solution are both flowing, the needle and tube are coupled. O. L. Suggett (New York Medical Journal, May 17, 1913).

NERVOUS SYSTEM, SPIROCHÆTA PALLIDA IN THE CENTRAL.

Positive results were obtained by the author in the course of an examination of 200 brains from general paralytic patients and 12 spinal cords from cases of tabes dorsalis. In the former series the pale spirochete was discovered in 48 cases, ranging in age from 29 to 75 years. In 1 of these cases the affection had been even of six years' duration. The organisms were found especially in the frontal lobe, the Rolandic region, sometimes in the hippocampus. In 1 case they were detected in all portions of the brain, though in greatest number in the motor areas. They are more numerous in the cortex than in the white matter, and are dispersed in groups between the nerve-cells and neuroglia fibers. They very rarely occur in the neighborhood of blood-vessels and are almost never situated in the vessel walls.

In the cases of tabes, the search for the spirochetes proved more arduous. The organisms were found only in 1 case, in the posterior columns of the cord. Noguchi (Münchener medizinische Wochenschrift, April 8, 1913).

NEURITIS, TREATMENT OF.

In employing electricity systematically for diagnostic purposes in neuritis, the author was led to the conclusion that the neuromuscular abnormality in this condition is never localized, but tends essentially to spread. Even lesions clearly peripheral in origin and unilateral always became bilateral, and the nerve-centers, especially the cord, are regularly implicated.

In view of these conditions, the author departed from the usual method of applying the galvanic current in these cases, and began to employ a more diffuse treatment with low intensity of current per unit of area. The electrodes, consisting of absorbent cotton wrapped with gauze, and 3 or 4 centimeters thick, are made into long bands, according to the extent of the parts to be exposed. An electrode as long as 120 centimeters (4 feet) is used for the lower limbs. These electrodes are placed parallel in pairs along the limbs or the spinal column, and receive the current throughout metallic bands of appropriate length. Their surfaces vary from 600 to 2000 square centimeters, and the intensity of current employed easily attains 60 to 80 milliampères for one arm and 100 to 125 milliampères for one lower extremity. Generally the two lower limbs are simultaneously treated, and the combined intensity may be carried as high as 300 milliampères. The density of current per unit of surface remains low, however,—0.1 to 0.2 milliampère at the most. The sittings, which are readily borne by the patient, can be made to last three-quarters to one hour, and be frequently repeated. The current is propagated transversely to the axis of the nerves, and not longitudinally as in the procedure hitherto generally carried out.

In nearly 600 cases of neuritis, of all grades of severity, thus treated by the author in the last five years, complete recovery, verified by electrodiagnosis, was

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regularly obtained where the patients could devote sufficient time to the treatment. Even certain forms of myelitis—traumatic in particular—were considerably benefited by the treatment. Hirtz (Académie des Sciences, Paris; Semaine médicale, May 28, 1913).

OBSTETRICS, BETA-IMIDAZOLYLETHYLAMINE IN.

This substance, the author points out, can be used with success as a substitute for ergot for the purpose of stimulating the uterine contractions. Where labor pains have already begun, the drug renders them more effectual. The duration of labor is shortened by it. Beta-imidazolylethylamine is a body present in ergot, but it is ordinarily prepared by splitting off carbon dioxide from histidine. It is a direct stimulant to smooth muscle tissue, and occupies a position between ergot itself and pituitary extract. A widely dilated os is a prerequisite to the administration of this substance. Spasm of the cervix and retardation of labor might otherwise result. F. Jäger (Zentralblatt für Gynäkologie, February 22, 1913).

PELLAGRA, SPECIFIC TREATMENT OF.

Report of 27 cases of pellagra treated with salvarsan; of these 20 were apparently cured, 3 were doubtful and 4 ended fatally. The author gives each patient doses of salvarsan varying in number from 5 to 12 at intervals of seven to ten days. The first dose was 0.2 Gm., the second 0.4 Gm., and subsequent doses were calculated on the basis of 0.1 Gm. for every 20 pounds of the patient's weight. Both syphilis and pellagra should be treated by giving intravenous doses of salvarsan until no reaction follows, *i.e.*, no fever, no vomiting, and no bowel disturbance. Pellagra cases require twice as many doses as the syphilitic.

Of the four deaths after salvarsan there seemed to be some connection in three of them between the reaction and a subsequent cerebritis or meningitis.

There appears to be but small choice in pellagra between salvarsan and sodium arsanilate, except that the latter must be given hypodermically during a period varying from eighteen months to two years. E. H. Martin (New York Medical Journal, March 15, 1913).

PELVIC INFLAMMATIONS, CHRONIC.

The conditions referred to especially by the author are chronic perimetritis with adhesions, chronic parametritis, shortening of the uterosacral ligaments with consequent retrodisplacement of the uterus, and lastly old pelvic cellular exudates. The symptoms consist of the customary gynecological phenomena—dysmenorrhea, backache, leucorrhea, vague and obscure pains associated with headache, nausea, and general malaise.

The diagnosis of chronic perimetritis with adhesions is made by bimanual examination. With the fingers of the inside hand pressed between the folds of the uterosacral ligaments the examiner can feel, if the uterus is held firmly with the outside hand, bands of adhesions, about the size of heavy wrapping cord, running from the body of the uterus to the floor of the pelvis. When stretched or palpated these are quite painful. The same method is also employed in determining the condition of the uterosacral ligaments, which are felt in the *cul-de-sac* of Douglas, just behind the cervix, and when the seat of inflammatory changes are much thicker and firmer than usual, and are very sensitive to pressure or stretching. The uterus is found markedly retrodisplaced.

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Parametritis is diagnosticated by palpation of the sides and floor of the pelvis, causing pain which the patient recognizes as similar to that which she sometimes suffers. Scars in the vaginal vault, extending from the cervix, may also readily be felt. Adnexal disease and appendicitis are to be excluded.

In the treatment of each of these commonly overlooked but distressing conditions the author has used the following procedure of massage with gratifying results: While the index and middle fingers of the left hand steady and support the cervix, slightly lifting it up, the right hand by a series of rotary movements gently massages the uterus through the abdominal wall. These movements are performed slowly, ten to fifteen times at the first treatment, and if no unusual pain or soreness follows, the same treatment can be carried out three times weekly, until the patient is relieved of her symptoms. Even in patients with rigid abdomen, the operator is able, after a few treatments, to massage the whole posterior body of the uterus, thus improving the blood-supply of the pelvic viscera and at the same time stretching the adhesions which keep the uterus in an abnormal position and lengthening the uterosacral ligaments. By the same series of movements through the abdominal wall, a retroverted uterus which is movable can be brought forward; the only change made is to place the inside fingers against the anterior portion of the cervix and push posteriorly, at the same time bringing the uterus forward and installing a pessary with the outside hand.

Massage of this kind is also indicated in puerperal cases of retroversion, in which the uterus is heavy and congested. The muscular tone of the organ is thereby improved and exudation and improved circulation result. Frank McMorrow (Journal of the American Medical Association, March 29, 1913).

PELVIS, CONTRACTED, PROCEDURE FOR FACILITATING DELIVERY IN.

The procedure recommended by the author consists in putting a cushion under the sacrum of the parturient woman and, with attendants on either side, having the patient's knees carried up and pressed against the middle of the abdomen, with the legs turned outward, during each pain. By this method the sacroiliac joints are placed on the stretch and the promontory of the sacrum tends to recede in a posterior direction. The anteroposterior diameter of a contracted pelvis can thus be increased and, according to the author's experience, living infants successfully delivered in cases where this would not otherwise have been possible. G. Freudenthal (Berliner klinische Wochenschrift, April 14, 1913).

PEMPHIGUS, TREATMENT OF.

The author reports the case of a woman, 48 years of age, who had been suffering for two years from pemphigus in a pronounced form. The affection had proven refractory to all treatment, including salvarsan. Marked loss of body weight had taken place, and fever and even delirium were among the symptoms. The treatment finally resorted to was to obtain some blood from the patient's husband, and inject it at once, without defibrination, into a vein of the patient. Complete recovery promptly followed, and this has since been maintained for nearly eight months. The author considers that if a cannula with small lumen is used, no danger from entrance of clots need be apprehended in injecting whole blood intravenously.

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G. Praetorius (Münchener medizinische Wochenschrift, April 22, 1913).

PITUITARY BODY AND CARBOHYDRATE METABOLISM.

The pituitary body, and more particularly its posterior lobe, plays a significant rôle in the metabolism of carbohydrates, and its action in this respect is under the control of fibers which reach the gland by way of the superior cervical sympathetic ganglion. Stimulation of this nervous pathway at the so-called sugar center in the fourth ventricle, at the superior cervical ganglion, and by excitation of the pituitary body itself, liberates a chemical substance which causes glycogenolysis and glycosuria, independent of any possible nervous impulse reaching the glycogen-holding cells of the muscles or abdominal viscera. Lewis H. Weed, Harvey Cushing, and Conrad Jacobson (Johns Hopkins Hospital Bulletin, February, 1913).

PLACENTA PRÆVIA, TREATMENT OF, WITH PITUITARY EXTRACT.

The author reports the results obtained in 16 cases of placenta prævia treated with pituitrin: 13 living children were born. Of the 3 born dead, 2 were found to have died before the pituitrin was employed. In the other case, fetal death occurred four hours after the injection, and it is doubtful therefore whether it was due to the latter. The course of the labor was accelerated in the majority of the cases. If only a small portion of the placenta presents, and especially if the vertex presents and the labor has advanced to such an extent that the cervix is shortened and sufficiently dilated, the membranes should be ruptured and pituitrin given. This plan is best adapted for a marginal variety of placenta prævia, for if a larger segment presents the engagement of the head is interfered with. In other cases the author recommends combined version with injections of pituitrin. The resulting labor pains force the breech against the loosened segment of the placenta, and completion of the delivery may be safely awaited, no attempts at extraction being necessary except those directed to the arms and the head. Where dilatation is not sufficient to admit of combined version, a small dilating bag may be inserted, or a vaginal tampon applied. After this has led to sufficient dilatation, combined version with the injection of pituitrin should be practised. Trapl (Monatschrift für Geburtshülfe und Gynäkologie, October, 1912).

SALVARSAN, OILY INJECTIONS OF.

Fifty-eight oily injections given to 44 individuals: 52 were of salvarsan and 6 of neosalvarsan. In general the effects on the lesions and on the Wassermann reaction were excellent; 20 of the injections were practically painless, and only 12 caused pain that was at all severe; 2, however, developed slight abscesses of no particular import; 1 developed peripheral phlebitis about two weeks later, and the most serious accident was pulmonary embolism, the patient fortunately recovering in about two weeks.

In 6 instances abscess at the site of injection developed *in from three to twenty-four months after treatment.* In 1 of these patients both buttocks broke down about three months after injection, although the injection was unilateral. In 1 case, exactly two years after the administration of salvarsan, an abscess pointed in the buttock. It was opened, and about 6 ounces of sterile pus and considerable tissue *débris* were evacuated. In another case 5 small injec-

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tions were given at biweekly intervals without any especial trouble, but about three months after the last both buttocks became red, swollen, and painful, with distinct fluctuation. One other patient has had permanent nodules left in his buttocks, and complains bitterly of pains radiating down both sciatic nerves.

The material injected is evidently toxic to tissue at the site of injection, and this dead tissue, if not absorbed, may act as a foreign body. In the abscesses opened no trace of salvarsan could be found.

After the use of neosalvarsan in water one must be prepared for severe pain. The author has seen 1 patient rendered absolutely helpless for three weeks. Nor does the administration of neosalvarsan in glycerin work any better. Oily injections of neosalvarsan are more painful than when salvarsan is used. Out of 6 injections 3 patients experienced great discomfort. The intravenous method should be the only one employed. H. H. Hazen (Journal of the American Medical Association, May 24, 1913).

SALVARSAN, MANNER OF GIVING.

The apparatus used by the writer is simple in the extreme. A large, heavy glass bulb-funnel, of about 500 c.c. capacity, without stop-cock or stopper, is used as the receptacle. About four feet of small tubing is connected to this, with a pinch-cock and a large aspirating needle fitted to the distal end. A stoppered graduate cylinder of 50-c.c. capacity and a pipette of 2-c.c. capacity are also required. For the preparation of the solution of the drug, only one reagent is needed, a 15 per cent. solution of sodium hydroxide in distilled water. No sodium chloride or hydroxide except the C. P. should ever be employed. The sterilization of the apparatus must be carried out by boiling in distilled water. The water used in making up the solution should be freshly distilled. The writer uses a simple combination of a Jena distilling flask and a Liebig condenser for this purpose.

The patient's arm is scrubbed from shoulder to wrist and a bichloride pack applied and allowed to remain in place for at least half an hour. In case an incision is to be employed, it is well for the beginner not to make up the solution until the incision has been made and the vein laid bare; the apparatus should be boiling while the vein is being exposed.

The apparatus having been boiled for fifteen minutes in a covered dish with enough distilled water to cover the articles, the distilled water and sodium chloride solutions are put on to boil. These are conveniently contained in Erlenmeyer flasks of about 500-c.c. capacity, with gauze stoppers. The saline solution is made up by adding 7.5 Gm. of C. P. sodium chloride to 1 liter of freshly distilled water.

About 20 or 30 c.c. of the hot sterile water is poured into the graduate, and the drug added to this. If the entire dose of 0.6 Gm. is not to be given, the reduction can most easily be made by discarding a proper proportion of the solution. The stopper is placed in the graduate and the latter shaken until a perfectly clear solution results. The writer does not use glass beads.

Two cubic centimeters of the sodium hydroxide solution are now added from the pipette, and the graduate shaken again. A voluminous precipitate results. More alkali solution is added drop by drop, with frequent shaking, until the solution again becomes clear. The approach of the point where clearing occurs is indicated by a darkening of the

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liquid. An absolutely clear solution, with not even a trace of opalescence, should be had. Keeping the solutions hot will aid in obtaining and maintaining this effect.

About 350 c.c. of the hot sterile salt solution is now poured into the bulb-funnel and allowed to run rapidly through the tube and needle for a few seconds, to be sure that all air is removed from the tube. It is even well to strip the tube through the fingers, to be sure that no air-bubbles remain.

The needle is now introduced into the vein, in the direction of the blood-current. The salt solution should be flowing constantly during this procedure, to prevent the access of air to the needle-end.

When it is seen that the salt solution is flowing satisfactorily, the salvarsan solution is carefully poured into the bulb. About fifteen minutes should be allowed for the 300 c.c. to run in. When the bulb is almost emptied, 50 or 75 c.c. of saline should be added, to wash out the tube and vein. Unless the solution was almost boiling when placed in the bulb, it will be cooled down to 100° F. or so when it reaches the needle. The temperature may be estimated closely enough by feeling the tube and needle.

When the last added saline has run through the tube for a time, the needle is withdrawn and a compress instantly placed over the opening, and held there with moderate pressure for a few minutes. If the skin has been punctured, the opening is sealed with collodion; or if an incision has been made, it is sewed up with horsehair sutures and a dry, sterile dressing applied. The patient should be in bed during the entire procedure, and it is the writer's practice to keep him there for twenty-four hours afterward. H. L. Arnold (Journal of the Michigan State Medical Society, April, 1913).

SENILE PERIOD, FUNCTIONAL PSYCHOSES OF.

From experience with about 100 aged patients with psychoses, the following conclusions, among others, are drawn by the author: True atrophic senile dementia is comparatively infrequent among the mental disorders of senility. Psychoses occur during the period of senility which are not, in the strict sense of the expression, "senile psychoses." The majority of mental disorders of old age are the result of arteriosclerosis of the cerebral vessels and its effects. Functional psychoses, such as occur in early life, are not infrequent among senile individuals. They are likely to be of (*a*) the confusional type, (*b*) the *depressive* (melancholic) type, or (*c*) the recurrent manic of melancholic (manic-depressive) type. The confusional and depressive types appeared to be of toxic origin, probably due to systemic vascular disease which furnishes a basis for the production of toxic materials of renal, hepatic, or gastro-intestinal origin. Of the functional psychoses of the senile period a fair percentage (20 per cent.) are recoverable. A. C. Buckley (Pennsylvania Medical Journal, February, 1913).

SEROFIBRINOUS PLEURISY, AUTOSEROTHERAPY IN.

From his experience in treating 12 cases of pleurisy by the subcutaneous reinjection of effused fluid, the author has been led to declare that the measure is an excellent one and is worthy of further and more general trial. Considering that it is absolutely devoid of any danger, that there have never been observed the slightest unfavorable effects,

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and that it can be performed by anyone who can make an ordinary exploratory puncture, it ought to be tried in every case of pleural effusion in which the fluid is not purulent. Since in practically every case of pleurisy showing signs of effusion exploratory puncture is to be done with a view to determining the character of the fluid in the pleural cavity, it is advisable, when the contents of the pleural cavity are found to be serous, that the needle should not be withdrawn, but that when its point is brought to the subcutaneous tissue it should be injected then and there. The quantity of fluid to be injected need not be very large; from 2 to 5 c.c. is quite enough.

In favorable cases, within two or three days the subjective symptoms—pain, dyspnea, prostration etc.—will be ameliorated or will entirely disappear, while physical exploration of the chest will show that the upper level of the fluid will be lower than it was before the injection. Within a week or ten days the fluid in the chest will disappear altogether in about 80 per cent. of the cases. In some patients it may be necessary to repeat the treatment several times every two or three days before any salutary effects are evident. In about 10 or 15 per cent. of cases this mode of treatment seems to fail, but even here no harm is done to the patient. Maurice Fishberg (Journal of the American Medical Association, March 28, 1913).

TIC AND SPASM OF THE FACE.

The movements in facial spasm are strictly confined to the area of distribution of the facial nerve, in contradistinction to tic, which does not correspond to a well-defined automatic distribution of a nerve. The twitching in tic is an exaggerated normal movement made originally with a certain object in view. In spasm, on the contrary, the twitching is illogical and without any reasonable expression; it does not resemble in the least any ordinary mimicry of the face. A characteristic feature of spasm is its occurrence during sleep. A psychic element, however, plays a certain rôle in tic, which does not occur during sleep and can be controlled to a certain extent by cerebral interference. The genesis of tic is really mental. A stimulation of any portion of the seventh nerve or of its nucleus, on the other hand, or else of the sensory fibers of the fifth nerve, will produce a spasm.

In view of the different pathogenesis of the two affections the treatment must logically differ. In tic the first method of treatment consists of a systematic and regularly practised effort to immobilize the face. This training is done daily, at first for a brief period—only a few seconds—two or three times a day. Later the duration of each exercise is very gradually increased. If the patient is an adult, he can be taught how to exercise himself before a mirror. When the person becomes proficient in immobilizing his face, at command or at his own will, a second method is taken up, consisting of voluntary contractions of the affected muscles. He is directed to produce slow, regular, and correct movements. Here again the exercises must be very brief, but frequently repeated. The treatment is tedious and frequently discouraging, but with perseverance the patient will eventually overcome the affection.

In facial spasm the trouble is generally caused by some irritation of the peripheral trunk of the seventh nerve. The best method of treatment consists of injecting with an ordinary hypodermic syringe into the facial nerve in

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the stylomastoid foramen 5 minims of an 80 per cent. solution of ethyl alcohol. The injection is done without a preliminary local anesthetic. As a point of departure, the end of the mastoid process can be taken. The foramen is situated in front and inward of this process. Sometimes it requires many injections before the nerve is caught. A successful injection means immediate facial palsy and disappearance of the spasm. The palsy is not permanent. It is advisable not to interfere with it for four to six weeks, at the end of which time electrical stimulation of the palsied muscles may be commenced. The palsy usually lasts about three months.

In the author's 11 cases of alcoholic injections into the facial nerve for hemispasm, highly satisfactory results were obtained. In 3 cases there was recurrence, but only after one, two, and three years, and in these the recurrent spasm was by far less pronounced than before the injections of alcohol. Alfred Gordon (Therapeutic Gazette, January, 1913).

TONSILLECTOMY, RESULTS OF.

In a series of 50 patients, aged 14 to 40, examined by the author from two to three months after operation, in which some one of the customary forms of tonsillectomy had been employed, he found deformed throats in more than 80 per cent. of the patients. Not more than 20 per cent. had throats approaching the normal; 17 patients complained of speech defects for two or three weeks, 8 complained of speech and voice defects two months after operation, 2 practically lost the singing voice, while 13 said they could speak better and that their throats felt better after operation than before. About 5 per cent. complained of difficulty in using certain words and had nasal intonation.

The deformities following enucleation seemed to be of three varieties. In the first the pillars on both sides seemed to have disappeared, leaving a flattened surface where the tonsil was formerly, and a much-narrowed opening into the nasopharynx. In the second variety the pillars on both sides appeared to have grown together, leaving but one pillar where there were formerly two, with the uvula pulled to one side or the other. In the third variety the anterior pillar had wholly disappeared and a large amount of cicatricial tissue was deposited on the surface of the posterior pillar, altering its shape and function. In some of these cases the soft palate and uvula were pulled down to a very much lower position than normal, thus accounting for the nasal intonation complained of by some of the patients. In all those whose singing voice was affected the posterior pillar was very much out of the normal position through contraction of cicatricial tissue.

To avoid these unsatisfactory results, the author has for some time been removing tonsils in the following manner: In adult patients he cocainizes the surface of the tonsil with a 10 per cent. solution of cocaine and injects into the the cellular tissue surrounding the capsule of the tonsil a 1½ per cent. solution of bisulphate of quinine. This makes the operation absolutely painless. In young children he uses ether as a general anesthetic.

The operation is done thus: With a tonsil tenaculum inserted as far as possible into the center of the gland, avoiding the capsule, he takes hold of the bands of tissue extending from one side to the other, and endeavors to invert the tonsil the same as one would invert a

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uterus by pulling on the cord of a retained placenta. Where the capsule is not too much contracted and where the gland has not become a solid mass of hypertrophied tissue and the capsule is not bound down on all sides with bands of tissue left from old abscesses, on slight traction the tonsil will invert, and after it is completely inverted the author passes the snare about it, and by slowly tightening the snare, taking from one to three minutes, removes the tonsil without injury to the muscles, pain, or hemorrhage. He has employed this method during the past two years in a large number of cases, and is yet to see his first case with deformity following the procedure. B. de F. Sheedy (Medical Record, April 12, 1913).

TRACHOMA, TREATMENT OF.

Removal of the contents of the granules by expression may be done with any of the good expression forceps now in use, as Knapp's roller forceps, Khunt's expressor or Noyes's oval forceps.

When the proper subsequent treatment is applied, all cases of trachoma improve much more rapidly after expression than if expression had been omitted. Also, expression should be used in all chronic trachomatous eyes in which there is a varying amount of scar tissue with a vestige of active trachoma present. In many of these cases little or no trachomatous material will be removed, but the conjunctiva and lids are improved by the increased blood- and lymph- supply.

Pledgets of cotton wrung from water as hot as can be borne are placed on the closed lids immediately after the expression and changed every two minutes for about thirty minutes; invariably the patients experience much relief from these hot applications. After this, a drop of a 25 per cent. solution of argyrol or some bland oil may be placed in the eye.

The eye on which expression has been done almost invariably glues together for two or more mornings, and should be cleansed by having all secretions carefully wiped from the lid margins, canthi, and cilia. This should be repeated as often as necessary to keep the eye clean and dry, and a drop of the oil or argyrol may be used two or three times daily if necessary.

As soon as the acute effects of expression subside, in from five to seven days, there being no further secretion, inflammation or gluing together of the lids, the latter should be everted and the whole of the conjunctiva of the fornix and palpebral surfaces firmly and rather rapidly rubbed with a smooth pencil of copper sulphate. This should be done once daily to secure the maximum results. Great care should be exercised to keep the stick from coming into contact with the corneal epithelium. This may be accomplished by pushing the lower lid well up over the cornea after everting the upper lid. The object is to obtain only a stimulating (hyperemic) and not a caustic effect. All or practically all complaint of the pain will cease by the end of the sixth or seventh treatment, provided daily treatments are made and continued.

No water can be put into a trachomatous eye after expression except to wash out the blood and *débris* of expression, unless some special reason should occur. Even while there is secretion, the result of expression, most cases are cleansed by the use of moistened pledgets of cotton, and not by flushing the eyes copiously with various solutions.

Copper sulphate should never be used when there is a corneal ulcer, an inflammation, iritis or an acute exacerbation,

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but measures to allay these conditions should at once be instituted.

The formation of a bluish-white pellicle implies a too caustic action of the stick. In such cases the copper applications should be discontinued for a few days.

Various copper, mercury, and other ointments have been used in trachoma, but are considered inferior to the copper sulphate stick; by the judicious use of the stick just the proper amount of stimulation may be produced. A different degree of application is required not only in different eyes, but in the varying stages of the progress in an individual eye. Massage of the trachomatous conjunctiva by the use of a cotton wound applicator, moistened and dipped into dry boric acid powder, has been given an extensive trial, but no better results have been obtained than with the copper—if as good. W. H. Harrison (Journal of the American Medical Association, February 22, 1913).

TYPHOID FEVER, MODIFICATION OF RUSSO'S TEST FOR.

The authors describe a modification of the original technique of this test. In all, over 2500 specimens of urine were examined, in about 1000 different cases.

The test is as follows: Make an aqueous solution of methylene blue of such concentration that, when thoroughly mixed, it will just be translucent. Using an ordinary test-tube, employ a sufficient quantity of methylene-blue solution to fill the test-tube just above the bowl. Then fill the test-tube with urine and, after thoroughly mixing, examine against a good daylight and note the color reaction. Emerald or mint green indicates a positive reaction, while any tinge of blue renders it negative.

The modified technique is advantageous because it simplifies the preparation of the reagent, obviates the necessity of using exact quantities, and, especially, gives a larger quantity of fluid by which the correct color may be judged. The solution of methylene blue keeps indefinitely without apparently undergoing any changes.

Certain urines must be eliminated in testing for this reaction, as they produce a green which is of no clinical importance. Those containing bile or blood must be discarded. Urines rendered cloudy by phosphates, urates, etc., should be filtered.

In the series of 1000 different cases, the only diseases showing a constant positive reaction were typhoid fever and malaria. A few positive reactions were obtained in other diseases, but these were not very numerous. Among 46 cases of typhoid fever examined, 41 gave a positive methylene-blue reaction. Of the 5 negative cases, the temperature in 1 had been normal for five days and in another it had been normal for two days. The urine of the third patient was neutral in reaction, and after acidification with acetic acid, a positive reaction appeared. This same case showed a positive reaction later when a relapse occurred. Of the other 2 negative cases, 1 was a very mild one. Of the 41 positive cases, 2 never showed a positive Widal reaction, 12 did not show a positive Widal until a number of days after the appearance of the methylene-blue reaction, and 29 were positive to both tests.

On the whole, the constant positive reaction in typhoid fever and its rare appearance in other conditions give this test marked corroborative value. A negative reaction is very good evidence that the condition is not typhoid fever.

The prognostic value of the test is to be doubted, but its continued appear-

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ance in severe cases and reappearance in relapses are important. Its simplicity strongly recommends it, with certain limitations, to wit, that a differentiation of the true greens from the bluish greens is a matter of practice and experience. Its very early appearance will aid in isolating a suspected patient at once, and general prophylactic measures will be instituted. Lester Neuman and E. B. Behrend (Archives of Internal Medicine, April, 1913).

VESICAL PAPILLOMA AND CARCINOMA.

In a study of the results of surgical intervention in 1160 collected cases, the author found that at least two-thirds of all tumors of the bladder that are encountered by the surgeon are malignant. There is an extraordinary tendency to recurrence in malignant form after the removal of a benign neoplasm. About two-thirds of vesical neoplasms have their seat in the lower third of the bladder. It is impossible to be quite certain of the nature of a bladder tumor except by means of an expert's microscopic examination of all parts of the growth after it has been removed. The large majority are either papilloma or carcinoma. After removal of a benign tumor recurrence has taken place after an interval as long as thirteen years; in the case of a malignant tumor, as long as six years from the time of operation. A large majority of recurrences, however, have been within the first three years. All tumors of the bladder cause death of the patients, though in a few cases of both benign and malignant tumors there have been remarkably long intervals between the occurrences of symptoms, and death has been delayed for as many as thirty years. The average interval between the initial symptoms and death is about three years in the case of malignant and four years in the case of benign tumors. In a considerable number of cases tumors originally benign have at some time in their course become malignant.

Regarding treatment, the author asserts that in cases of benign papilloma the method appearing to be that of choice in the first instance is destruction of the tumor by the high-frequency current of Oudin. This treatment should, however, be abandoned as soon as it becomes evident that a recurrent tumor is malignant, and either transperitoneal partial resection of the bladder or total cystectomy (the latter in early cases of sarcoma, and combined with bilateral nephrostomy in preference to ureteral implantation) substituted for it.

Of the last two methods the former will be the more generally valuable owing to the fact that it can be applied to a much larger class of patients than the latter; but in the small class in which total extirpation can be properly applied, this procedure will prove a better protection against recurrence than the partial operation.

The operation of suprapubic excision may still be found superior, in the prevention of recurrence of benign tumors, to the high-frequency current. This can only be determined by observation of the results of the latter method after the lapse of some years more.

Partial resection and excision by the ordinary suprapubic method should be abandoned in vesical carcinoma because it is evidently much inferior as regards recurrence to transperitoneal partial resection. F. S. Watson (Urologic and Cutaneous Review, February, 1913).

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Clinical Summary

Practical hints from articles and abstracts that have appeared in the Monthly Cyclopedia and Medical Bulletin during the current year.

Acne. TREATMENT. 1. Following lotion advised: Zinci sulphatis, potassæ sulphuratæ, sulphuris præcipitati, of each 3j; aquæ, ℥iv; to be applied at night. 2. To keep open orifices of follicles, resorcinol in 10 to 15 per cent. paste, recommended. 3. If skin thick, sluggish and oily: Preliminary washing with tincture of green soap. 4. Warm water may be used after incising pustules, to favor bleeding, but for washing cold water is preferable. 5. X-rays of service (*a*) to increase local blood-supply and improve resistance; (*b*) to cause atrophy of sebaceous glands. 6. High-frequency current useful to reduce induration of nodular acne. 7. Massage or local manipulation, to facilitate drainage of ducts. 8. Dermal curet, when pustules cured and superficial epithelium somewhat macerated by resorcin. *Chipman.* Page 283

Adenitis, Tuberculous. TREATMENT. 1. Produce Bier hyperemia by applying elastic band about neck for a few hours before opening abscess. 2. Make very small straight incision into gland, evacuate contents with dull spoon, using no force, and, without washing or wiping out cavity, introduce a 2 to 4 per cent. solution of formaldehyde in glycerin, and seal incision. Primary healing results in 50 per cent. of cases; others are treated by further injections. 3. In cases of extensive involvement, prescribe enzymes of yeast internally. 4. In the few cases that do not respond satisfactorily, resort to radical operation. *Brown.* 303

Albuminuria. TREATMENT. Prophylactic doses of Roux's antidiphtheritic serum in 128 cases of scarlet fever found to lower greatly frequency of albuminuria in these cases. Anaphylactic effects extremely rare with this serum. In all cases of albuminuria originating from throat inflammation, as well as in albuminuria in general where other measures have proven ineffective, the serum should be given hypodermically in doses of 10 c.c. (2½ drams) every three or four days. *Galliot.* 36

Anal Fissure. TREATMENT. Conservative measures advocated in painful fissure. In examining for it have patient bear down, or blow in some orthoform. In treatment: 1. Apply thigenol on cotton on end of probe, which is then withdrawn, leaving cotton in position. 2. Patient to drink tumblerful of hot water an hour before breakfast, and another, either hot or cold, in evening. 3. To insure softness of motions: Tincture of cochineal and peppermint oil, of each, ♏x (0.6 c.c.); syrup of glycerin, 3j (4 c.c.); soft paraffin, ℥j (31 Gm.). If this objectionable, add 20 grains (1.3 Gm.) of powdered cocoa, or 10 to 20 grains of powdered agar. Dose of the mixture, 1 teaspoonful four times daily. 4. Where constipation previously present: Some aperient, such as confection of senna, 3ss-j (2-4 c.c.), to be given in addition. 5. After bowels act: Patient to wash parts and apply some bland ointment, *e.g.*, one of eucalyptus. 6. Where violent sphincteric spasm and pain, dilate under gas, and, if sentinel pile present, remove with forceps. *Baldwin.* 109

Anemia. TREATMENT. Administration of olive oil and glycerin, equal parts, in gradually increasing doses two hours after each meal considered a valuable measure. *Bram.* 47

Appendicitis, Acute. TREATMENT. After operation in children: 1. Give warm saline solution by rectum, 8 to 10 ounces every two or four hours; administer slowly with catheter and funnel. 2. Feed with a decoction of crushed raisins, alternated with albumin water. 3. Open bowels as soon as possible. If no normal movement within twenty-four hours, give glycerin enema; use syrup of senna as routine aperient. *Stiven.* 37

Appendicitis, Chronic. DIAGNOSIS. In cases of chronic appendicitis with digestive symptoms, induction of referred pain or distress in the epigastrium, left hypochondrium, umbilical, left inguinal, or precordial region by a continuous firm pressure over the appendix (McBurney's point) is a valuable test in deciding when and when not to recommend operation. *Aaron.* 283

Arteriosclerosis. TREATMENT. 1. Rest for whole body and particularly any organs specially involved in sclerotic process. 2. Diet such as will avoid all digestive disturbances. 3. Judicious restriction of fluids. 4. Systematic hydrotherapy, carbon dioxide baths or electric baths. 5. Iodides only where angina pectoris, syphilis, or eye affections due to sclerosis of retinal artery. 6. Diuretin, especially valuable in angina pectoris and tobacco heart; lowers blood-pressure markedly after some weeks' administration. *Von Noorden.* 346

Arthritis, Chronic. TREATMENT. Certain joint cases, rebellious to all other treatment, can be arrested by proper diet combined with colonic lavage. Breakfast: Cereal, small amount; toast with butter; imitation cereal coffee. Between breakfast and lunch: Buttermilk, 2 glasses; water, 1 glass. Lunch: Clear soup (or lettuce or spinach); 1 roast potato; 2 slices toast; imitation coffee. Between lunch and dnner: Buttermilk, 1 glass; water, 1 glass. Dinner: Clear soup (or twice a week small amount roast chicken, or

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1 egg); toast or lettuce; imitation coffee; apple sauce. Between dinner and bedtime: Buttermilk and water. Daily simple enema followed by high colonic lavage with about 1½ quarts normal saline solution, until washings return fairly clear. Adapt diet to individual caloric needs and with constant regard to weight. *Pemberton.* Page 45

Arthritis, Gonorrheal. TREATMENT. A. Acute. 1. Sodium salicylate, 1 to 4 drams (4 to 6 Gm.) or acetyl salicylic acid, 20 to 30 or 40 grains (1.3 to 2.6 Gm.), freely diluted, during febrile stage. 2. Where intolerable pain and insomnia or threatening rupture of synovial membrane or subluxation, puncture, repeated if necessary, and active counterirritation. 3. In suppurative and grave forms, arthrotomy, either simple or followed by iodine or zinc chloride. 4. Passive movements and massage, when acute symptoms subsided. Other available measures: 5. Antigonococcic vaccines. 6. Antimeningococcic serum. 7. Autoserotherapy. 8. X-rays or radium in obstinate cases. 9. Bier's hyperemia. 10. Hot-air treatment especially; air in hot-air-box at 175° to 210° F., for one-half to one hour at a time. B. Chronic. Additional special measures: 1. Disinfection of genitourinary tract. 2. Thyroid substance, 2-grain (0.12 Gm.) cachets one to three times daily. 3. Fibrolysin injections, 30 minims (2 c.c.) daily for a fortnight, where joint deformity present. *Dardel.* 236

Arthritis, Rheumatoid. TREATMENT. Atophan found most efficient drug in relieving pain in a case of rheumatoid arthritis. *Kahlo.* 350

Asthma, Bronchial. TREATMENT. 1. When patient first seen during an attack, give 10 grains (0.6 Gm.) of blue mass or an equivalent amount of calomel with soda, followed by salts next morning. 2. Morphine and atropine injection, only if patient suffering intensely. 3. Sodium iodate, gr. iv-v (0.25-0.3 Gm.) every four to six hours, in capsules, given with food (contraindicated in the tuberculous, especially if hemoptysis). 4. Repeat mercurial purge if attack not markedly better in twenty-four hours. 5. Diet. During attacks: Broths every two to four hours. In intervals between attacks: Enough plain, coarse food to satisfy hunger and no more. Soups, clear of fat; fresh fish; raw oysters or clams; tender and lean meats; all vegetables except onions, cabbage, cucumbers, corn on cob; potatoes, peas, and beans only sparingly; only well-baked or toasted bread; rice, cereals, and eggs in moderation; no raw fruits; pastry, sweets, and any articles found by experience to disagree to be avoided. Careful scrutiny of patient's selection of foods required. Heaviest meal to be taken at noon; light supper. *Oettinger.* 37

Theobromine sodium salicylate (diuretin) found to do good in many cases. Often it is sufficient to give 15 to 30 grains (1 to 2 Gm.) before time of expected paroxysm. The product can be taken for weeks without harm. *Meyer and Cahn.* 179

Inhalation of 1: 1000 epinephrin solution in a special very fine spray from small atomizer advised for arrest of a paroxysm by patient at any time. In established severe attacks, following combination recommended: Epinephrin solution, 9 c.c.; atropine sulphate, 0.01 Gm.; cocaine hydrochloride, 0.025 Gm.; distilled water, 1 c.c. *Staübli.* 284

Combined injections of 0.0008 Gm. (1/80 grain) of epinephrin and 0.04 Gm. (⅔ grain) of pituitary extract in 1 c.c. (16 minims) of water used with marked success in arresting paroxysms in 300 cases. More effectual than epinephrin alone. Second injection required in only 10 instances. *Weiss.* 296

Bronchopneumonia. TREATMENT. Creosote carbonate recommended for use in bronchopneumonia and obstinate chronic bronchitis in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first three years; in fifth and sixth years, 20 drops (2 Gm.). *Hunäns.* 162

Carcinoma. TREATMENT. Silicic acid internally, 1/6 to ⅓ grain (0.01 to 0.02 Gm.) daily, advised to prevent recurrence after cancer operations. In cancer of digestive organs, however, not more than a few milligrams should be given daily. *Benedikt.* 242

Carcinoma, Esophageal. TREATMENT. Hydrogen dioxide, 1 dessertspoonful of 1 to 3 per cent. solution every hour, found to be valuable palliative measure where stenosis apparently complete. Within twenty-four hours stenosis is overcome, and later purées and even solid food can be swallowed. Subjective symptoms disappear and patients gain in weight. Measure of little use, however, in scirrhous form of cancer. *Fradiss.* 109

Carcinoma, Uterine. TREATMENT. Method described value of which depends on (1) destruction of gross mass of carcinoma in uterus by the actual cautery heated to a little less than dull cherry-red heat; (2) application of heat to pathological tissues until whole pelvis has its temperature raised to 120° F. Uterus is thrown off as charred lump and remaining shell becomes a cicatricial mass free of carcinoma. Cachexia disappears and cure is more probable than with any other method. *Percy.* 234

Cardiovascular Disease. TREATMENT. Ideal diet in presence of impaired circulation consists essentially of bread and butter, with some milk to supply fluid, and enough cheese to make up protein requirements; fruits and vegetables to be added in moderate amount. *Bishop.* 108

Reference made to cases with high blood-pressure, hypertrophied heart, without notable thickening of superficial arteries or renal changes of importance. Symptoms usually

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respiratory or gastric, occasionally vertigo, tinnitus, or peripheral numbness and tingling. Measures advised: 1. Rest, especially mental. 2. Reduction in quantity of food taken, especially of purin-containing articles; small evening meal. 3. Restriction of alcohol, and especially tobacco. 4. Bowels to be kept open with phenolphthalein and rhubarb, or compound licorice powder, and calomel or blue mass occasionally. 5. Nitrites, only to relieve symptoms; where nitroglycerin fails, sodium nitrite, 1/8 to 2 or 3 grains (0.007 to 0.2 Gm.), or erythrol tetranitrate, 1/2 grain (0.03 Gm.) useful. 6. Sodium iodide, two hours after meals, in water or milk. 7. Digitalis in small doses where dyspnea or even vertigo. 8. Venesection at times very useful and effective. *Riesman.* Page 288

Chorea. TREATMENT. Twenty-five cases, in children of 8 to 19 years, in which abnormal movements rapidly disappeared after 3 or 4 intravenous injections of 0.2 to 0.35 Gm. of salvarsan, given weekly. Recovery regularly after three or four weeks. General condition also always greatly ameliorated. *Marie and Chatelin.* 38

Constipation. TREATMENT. Stubborn constipation in infants is relieved by giving 1 dram (4 c.c.) of olive oil once or twice daily. Constipation in neurasthenics is also benefited. *Bram.* 47

Diabetes Mellitus. TREATMENT. For first two weeks restrict to careful antidiabetic diet, unless sugar in urine practically disappears in less time. Then cautiously increase carbohydrates, always warning patient of danger of overeating *permissible* articles. Should sugar persist, put to bed and restrict to 1 raw egg and 2 ounces of olive oil 3 or 4 times a day. Continue free use of a mildly alkaline drinking water. If any acidosis symptoms result, decrease amount of oil and give small quantities of carbohydrates. Proper mastication an important detail in treatment. For constipation, use: Olive oil, castor oil, glycerin, of each, 160 parts; gum arabic, 18; flavoring (oil of cassia or gaultheria), 0.5. Best diabetic flour is: Unadulterated soy-bean flour, 350 parts; unground poppy seed, 30; eggs, 250; pure baking powder, 15; water, 340. *Hodgson.* 39

Cultures of lactic acid bacillus given to 13 cases in doses of 4 to 16 c.c. (1 to 4 drams) three times daily. Indican and sugar in urine both markedly reduced. Results probably due not only to removal of putrefaction, but also to partial inhibition of carbohydrate digestion by the bacilli, as indicated by experiments *in vitro*. *Horowitz.* 235

Necessity for individualization in prescription of diet emphasized. Low carbohydrate tolerance does not imply necessity of ingestion of an excess of meat. In all grave cases meats are dangerous. Vegetables are to be preferred, and those should be prescribed which, while containing a high percentage of carbohydrates, are well assimilated in the individual case. Large amounts of fats are often dangerous. *Graul.* 286

Dupuytren's Contraction. TREATMENT. Thyroid substance continuously administered in doses of 0.1 Gm. (1½ grains) found markedly beneficial in 5 cases. *Gilbert.* 173

Dysentery. TREATMENT. Measures useful in form of dysentery sometimes epidemic in institutions discussed. 1. Isolate patient and put to bed. 2. Give calomel, 1 grain (0.06 Gm.), followed in two hours by mixture of dilute sulphuric acid, 3iij (12 c.c.); compound tincture of cardamom, ℥j (30 c.c.), in water, enough to make ℥viij (250 c.c.); 3j every two hours during the disease. 3. Olive oil, 1 tablespoonful every two hours; no other food. 4. Boiled water at frequent intervals. 5. In the aged, debilitated or arteriosclerotic, 1 teaspoonful of brandy every three hours. *Jones.* 163

Eclampsia, Puerperal. TREATMENT. Report of 11 cases in which squeezing out of colostrum from breasts, thoroughly carried out, appeared usually beneficial. *Walcher.* 286

Edema of Extremities. TREATMENT. Where edema of legs resisted all measures, especially where incision not permitted, good results obtained from local use of hypertonic saline solutions—25 to 50 Gm. (¾ to 1½ ounces) of sodium chloride to 1 liter (quart) of distilled water. Soak gauze compresses lightly in this, wrap around legs, and cover with thick layer of absorbent cotton, held in place by bandages. Leave dressing on overnight. Equally good results in edemas due to broken compensation, Bright's disease, etc. *Pathault.* 40

Epididymitis, Gonorrheal. TREATMENT. Epididymotomy performed in 16 consecutive cases, 1 bilateral. Result: Sudden and permanent relief from pain; defervesence in two days; rapid reduction in swelling; prompt healing; early convalescence without relapse. *Culler.* 348

Epilepsy. TREATMENT. Solution of 1 part of phosphorus in 10 parts of oil used in 9 cases of severe epilepsy, and generally caused pronounced reduction in frequency of attacks. Enterogenous autointoxication to be overcome before phosphorus begun. *Leubuscher.* 348

Epistaxis. TREATMENT. With patient sitting in chair, stand behind him, place index fingers of both hands beneath body of lower jaw on each side, with thumbs resting behind angles, and make gentle traction upward upon head, and simultaneously extend it backward as far as patient can comfortably bear. Sets up artificial anemia in nose and head in general, causing epistaxis to cease. Desist in one or two minutes, or consciousness may be partly or wholly lost. *Ritschl.* 165

Eye Injuries. TREATMENT. Following formula used for disinfection of cornea, espe-

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cially after extraction of foreign bodies: To 2¼ grains (0.15 Gm.) of stovaine, finely pulverized and dissolved in 5 drops of oil, add, after mixing, preferably on a water bath: Hydrated wool-fat, gr. lxxv (5 Gm.), and petrolatum, ʒiiss (10 Gm.). Then add gradually: Iodine, gr. ii¼ (0.15 Gm.); sodium iodide, gr. ivss (0.3 Gm.); water, ♏xxiv (1½ Gm.). *Dewaele.* Page 237

In simple abrasions of cornea: 1. Irrigate conjunctival sac thoroughly with normal saline or boric acid solution. 2. Drop argyrol in eye. 3. Fill conjunctival sac with a sterile medium consisting of petrolatum, ʒvj (180 Gm.); mercury bichloride, gr. j (0.06 Gm.), and sodium chloride, gr. v (0.3 Gm.). Where cornea already infected and ulcer present, sterilize area with phenol, removing excess with alcohol; or else, touch lightly with platinum probe at red heat. In wounds of cornea: 1. Cleanse eye thoroughly. 2. Cut off any projecting iris. 3. Drop in atropine and argyrol. 4. Fill with sterile petrolatum. In burns of eye: 1. Fill with sterile petrolatum. 2. Move eyeball and lids frequently to prevent adhesions. Where sclera wounded: Draw conjunctiva over wound and stitch together. *White.* 240

Scarlet red, 1 per cent. in petrolatum or petrolatum and lanolin, equal parts, found to promote rapid healing in corneal or conjunctival abrasions, wounds, or burns. A minute portion of the ointment is placed on conjunctival surface of everted lower lid and a pad and bandage applied, once daily or on alternate days. Atropine also to be used, if indicated. *Allan.* 359

Fetal Position. DIAGNOSIS. More general use of abdominal examination for diagnosis of fetal position and presentation urged, being safer and generally more satisfactory than vaginal and combined methods. Even in very fleshy patients and in polyhydramnios, pressure on opposite sides of abdomen with one hand, while palpating with other, will often enable one to feel distinctly the fetal parts. *Phillips.* 287

Fibroid Phthisis. TREATMENT. Where profuse expectoration of pus, creosote often best remedy. Dose, 3 to 5 drops (0.18 to 0.3 c.c.) three times daily, given over a long period. Creosote carbonate more easily tolerated; dose, 15 to 25 drops (0.9 to 1.5 c.c.) per day. *Fishberg.* 180

Filariasis. TREATMENT. Case of pronounced elephantiasis of lower extremities in which two intravenous injections of 0.6 Gm. of salvarsan caused disappearance of filariæ from blood and great reduction in size of limbs, weight falling from 400 to 244 lbs. *Barnes.* 1

Fracture of Forearm. TREATMENT. To correct overriding of fragments, attach to hand, anteriorly and posteriorly, as separate straps, zinc oxide adhesive plasters 2½ inches in width, reading from above wrist to 6 inches beyond extended fingers, and fixed above wrist and about knuckles with encircling strips. Apply usual splint dressing and also a plaster-of-Paris encasing bandage, including hand and lower arm. When this firm, include beneath enveloped forearm, by more turns of plaster bandage, a light, flat wooden splint projecting 1 or 2 inches beyond extended fingers. To a cross-piece at end of this, projecting an inch, attach the double adhesive strap from hand with tacks, thus keeping bony fragments from overriding. *Miel.* 165

Fracture of Hip, Intracapsular. TREATMENT. Longitudinal traction alone often unsatisfactory in results. Longitudinal combined with lateral traction, however, or wide abduction in plaster of Paris, usually gives serviceable limb. Former far easier to apply and the more suitable the older the patient. Plaster-cast method requires much skill in application, and is better adapted to young patients. *Davis.* 41

Gangrene. TREATMENT. Alternate hot (95° F., gradually raised to 131° F.) and cold (room temperature) baths up to knee used with success in a case of sclerotic gangrene of leg. Pain relieved and normal color regained. Alternate immersions practised 30 to 50 times, morning and evening, for over a year. *Borchardt.* 348

Alternate lowering and raising of leg to horizontal position yields an effect similar to that of hot and cold baths in leg gangrene. *Moszkowiez and Frank.* 348

Gastric Ulcer. TREATMENT. Best preparation of bismuth to use is the subnitrate precipitated from a boiling-hot mixture. Cleanse stomach in morning with 150 c.c. (5 ounces) of Carlsbad or Vichy water, and three-quarter to one hour later give 10 to 20 Gm. (2½ to 5 drams) of bismuth subnitrate suspended in tumblerful of warm water. Administer daily, and increase or reduce dose, or discontinue, more or less rapidly, according to clinical course (Fleiner). Another method is to give same doses of bismuth finely suspended in oil, several times daily. Stepp recommends following bismuth suspension: Bismuthi subnitratis, gr. xlv (3 Gm.); chloroformi, ♏xv (1 c.c.); aquæ destillatæ, 5 fluidounces (150 c.c.); 1 to 2 tablespoonfuls to be taken hourly for several weeks. *Aaron.* 42

1. Absolute rest in bed. 2. No food for five to seven days. 3. Morphine hypodermically, until hemorrhage has ceased. 4. Ice-pack on abdomen, or hot applications in absense of hemorrhage. 5. Move bowels by enema, if necessary; where no hemorrhage, give citrate of magnesia or Carlsbad salts. 6. Bismuth subnitrate in 30-grain (2 Gm.) doses, with magnesium hydrogen dioxide (25 per cent.) in 7½-grain (0.5 Gm.) doses three times daily. Give boiled water if necessary to insure retention of these drugs. 7. Rectal alimentation, giving 500 c.c. (1 pint) of 10 per cent. dextrose solution at body tempera-

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ture every six hours, by Murphy drop method. 8. Return to mouth feeding as soon as possible, according patient's condition, beginning with small doses of albumin water several times daily. *Gompertz.* Page 139

Gastrointestinal Disturbance, Infantile. TREATMENT. Where constipation present, with retention of toxic food derivatives and symptoms such as high fever, tympanites, stupor, etc., give a 2-grain (0.12 Gm.) dose of calomel in candy form, followed in an hour or two by large dose of castor oil with ¼ its volume of equal parts of aromatic syrup of rhubarb and port wine. Keep child quiet on back. If doubt whether cathartic can work in time, give hot colon flushes to start intestinal action, or in obstinate cases, following enema: Epsom salt, glycerin, of each, 8 ounces; turpentine, 1 dram, and water, to 2 quarts, given at 110° F.

Subsequent treatment: Diet of toast water or good beef broth alone until temperature nearly normal. Calomel, 1 grain divided, followed by the castor-oil compound, every day and later on alternate days till stools normal. After this, equal parts of aromatic fluidextract of cascara sagrada and glycerin. *Freeburg.* 292

Gout. TREATMENT. Atophan used in 48 cases — acute, neuritic, and chronic — with greater relief than had been obtained from other remedies, except in the chronic cases, in which effects were slight. Gouty sore throat and coryza also generally benefited. Dose, 30 to 60 grains (2 to 4 Gm.) a day, in 7½-grain (0.5 Gm.) tablets, 1 or, in severe cases, 2 after each meal and at bedtime, or every two or three hours. *Kahlo.* 350

Headache. TREATMENT. Migraine and other forms of severe headache relieved by causing copious flow of nasal secretions, thus removing congestion of dura and pia. Formulæ used: I. Mentholis, gr. viiss (0.5 Gm.); acidi borici, gr. xv (1 Gm.); iridis florentinæ, saccari lactis, of each, 3ss (2 Gm.). II. Pulveris mayoranæ, iridis florentinæ, of each, gr. xv (1 Gm.); sacchari lactis, 3ss (2 Gm.); veratri (albi), gr. ii¼ (0.14 Gm.). *Lorand.* °37

Treatment of "indurative" variety considered. 1. Saline purge. 2. Rest in bed. 3. Affected muscles to be kept at rest. 4. Free diaphoresis at outset of attack. 5. Hot fomentations or bags *loco dolenti* for several hours. 6. Salicylates in full doses often effective in acute cases. 7. Colchicum and alkalies, if patient gouty. 8. Applications of chloral, menthol, and camphor rubbed together, locally. 9. Massage. 10. Vibration, except where arteriosclerosis. 11. Rhythmically reversed electric current. 12. In chronic cases with marked fibrosis: Potassium iodide and general tonics, or ionization with 2 per cent. sodium salicylate or lithium iodide solution. *Beling.* 291

Hemoptysis. TREATMENT. Subcutaneous injection of 40 c.c. of sterile gelatin solution recommended. Causes in twenty-four hours rise in viscosity of blood by 1.4 of original value. *Cmunt.* 110

To prevent onset of hemoptysis where sense of tightness in chest or sputum blood-streaked: 1. Absolute rest. 2. Nitroglycerin solution, ♏xv (1 c.c.), or sodium nitrite, gr. xv (1 Gm.), in ℥ij (60 c.c.) of water; ℥j (4 c.c.) every four hours for two or three days.—Where actual hemorrhage: 1. Put to bed in comfortable position. 2. Reassure patient. 3. Amyl nitrite inhalation. 4. Atropine, gr. 1/50 (0.0012 Gm.) hypodermically, to be repeated 2 or 3 times in next twenty-four hours. 5. Or, nitroglycerin, gr. 1/100 (0.0006 Gm.) hypodermically, at first every half-hour for 3 or 4 doses, later less often; followed by sodium nitrite, gr. j (0.06 Gm.) every three or four hours. 6. Where excessive nervous irritability, or cough troublesome: Morphine. 7. In abundant hemorrhages: Apply bandages to middle of arms and thighs. 8. Epinephrin hydrochloride, 5 drops of 1: 1000 solution, or suprarenal substance, 3 grains (0.18 Gm.), every three or four hours; or pituitary extract, injected subcutaneously. *Frazer.* 111

Hemorrhage. TREATMENT. In operations where bleeding from bone troublesome, cut a fragment of muscle from any convenient place in operative field and apply to bleeding bony surface or edge. Rub in if it will not adhere at first. Always efficient in arresting the bleeding. *Vaughan.* 290

Hemorrhage, Gastrointestinal. TREATMENT. Where only occult blood: Rest in bed, on diet of 3 or 4 liters (quarts) of milk, with Carlsbad water, until no blood detected for three or four days. Where liver or spleen enlarged and Wassermann positive: Specific treatment. For severe hemorrhage from any cause: (1) Diet limited to cold tea, ice-cold milk or egg-white jelly, taken regularly in very small amounts. (2) Saline enteroclysis by drop method, 1 liter each day, with 15 drops of 1: 1000 epinephrin solution added. (3) Ice-bag. (4) Gelatin in severe cases. (5) Rectal injections of calcium chloride. (6) Gastric lavage with ice-water, where clots palpable in stomach. *Boas.* 351

Hemorrhoids. TREATMENT. Olive oil a good demulcent laxative in hemorrhoids and anal fissure. *Bram.* 47

Where not much inflammation or hemorrhage, following ointment advisable: Cerati, olei amygdalæ expressi, zinci oxidi, of each 3iiss (10 Gm.); balsami Peruviani, gtt. iij. Piece of this of size of hazelnut to be introduced high up through anus morning and evening, and especially before stool. Where much hemorrhage, following may be used: Chrysarobini, gr. xij (0.8 Gm.); iodoformi, gr. v (0.3 Gm.); extracti belladonnæ fol., gr. x (0.6 Gm.); petrolati, ℥j (30 Gm.). Hot water or antipyrin in powder or 2 per cent.

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solution equally effective and less irritating. Where intense itching: Aluminis, gr. xv (1 Gm.); camphoræ, gr. xij (0.75 Gm.); adipis benzoinati, ʒj (30 Gm.). Where much moisture and also itching, 10 per cent. bismuth subsalicylate powder useful. If much congestion, use: Bismuthi subsalicylatis, zinci oxidi, of each gr. lxxv (5 Gm.); talci, ʒiij (90 Gm.). In voluminous, readily prolapsing or bleeding hemorrhoids, an injection of olive oil should be taken every evening before retiring. *Plicque.* Page 166

Rectal injections of pure crystallized calcium chloride strongly recommended for hemorrhage due to hemorrhoids. *Boas.* 351

Injection method used in about 450 cases with good results. Solution employed: Phenolis, 3j (4 Gm.); glycerini, q.s.; aquæ, q.s. ad 3x (40 c.c.). Phenol and water to be first mixed, then glycerin added drop by drop, stirring. About 50 per cent. of all cases could be safely treated and cured by injections. Clamp and cautery to be preferred, however, where patient not opposed to operation and there is no contraindication. Cases especially suited for injection method: (1) the markedly anemic; (2) tuberculous subjects; (3) where organic disease contraindicates anesthesia, particularly if subjects highly nervous; (4) bleeders. Not over 10 minims of the 10 per cent. phenol solution to be used at one sitting. No superficial necrosis, abscesses or thrombosis in author's cases. *Humphreys.* 351

Hernia. TREATMENT. Use of a mixture of 3 parts of hyoscine and 2 of atropine advised to facilitate reduction of incarcerated hernia. Inject $\frac{1}{1000}$ grain (0.00006 Gm.) every five to twenty minutes until desired effect obtained. Full dose for adult males is $\frac{1}{100}$ grain (0.0006 Gm.). *Waugh.* 167

Hyperchlorhydria. TREATMENT. Where patient constipated at beginning of treatment, give suspension of magnesia and bismuth just after and again one and a half hours after meals; each dose to represent 6 grains (0.4 Gm.) of magnesium hydroxide and 22 grains (1.5 Gm.) of bismuth subnitrate. Continue for three to five days, and, if evacuations still too frequent, use instead a powder containing equal *volumes* of magnesium oxide and magnesium carbonate, with a little powdered charcoal and sometimes bismuth. Less magnesium oxide should always be prescribed than is capable of neutralizing completely all the acid present. *Tupper.* 167

On a diet as nearly salt-free as possible without special preparation of foods before they reach the cook, hyperchlorhydria almost invariably abates. *Benedict* 354

Ileocolitis, Infantile. TREATMENT. In "putrefactive diarrhea" of infants, all irritating found should be avoided as, by causing increased mucous flow, it favors bacterial pullulation. Use of proteid of cows' milk, obtained by removing whey from skimmed milk with chymogen or pepsin, advisable. Break up curd into fine particles and suspend in 5 per cent. gelatin water, to be heated before administration. After four or five days to a week replace gelatin water partly by buttermilk, and skimmed-milk curds by whole-milk curds, gradually getting child on albumin-milk and finally on whole-milk mixture. *Grulee.* 168

Impetigo Contagiosa. TREATMENT. Remove all crusts, wash raw surfaces with bichloride solution, make a fresh paste by adding a few drops of mercury bichloride and ammonium chloride solution (1:2000) to small quantity of zinc oxide, and apply to irritated places twice daily. *Hiden.* 182

Infections, Pyogenic. TREATMENT. Dilute sulphuric acid in 20- or 30- minim (1.25-2.0 c.c.) doses, diluted with 2 oz. (60 c.c.) of water, every four hours, found very useful in treatment of carbuncles, boils, and other local pyogenic infections. Rapid circumscription and granulation of affected area follows. Dressing of 1:20 carbolized petrolatum used externally. Same measure found useful in early sepsis, inflamed lymphatics, blind boils, recurrent pimples and acne. In bronchiectasis and phthisis sputum becomes less purulent and less in amount. *Reynolds and Reynolds.* 284

Influenza. TREATMENT. Care to secure proper ventilation, alimentation, and elimination necessary. Local treatment of air passages important, to destroy causative bacillus. In the morning: 1. Cleanse nose and throat with spray of Dobell's solution or 1:400 phenol solution at 85° to 90° F. 2. Swab with: Balsam of Peru, gr. x (0.6 Gm.); ichthyol, gr. v (0.3 Gm.); glycerin, q. s. ad fʒij (60 c.c.). In the evening: 1. Repeat spray. 2. Have patient inhale for one-half hour creosote, 8 c.c. to quart of water. 3. Swab nose and throat with epinephrin solution. 4. Fifteen minutes later swab with argyrol, 10 per cent. Hydrotherapy of value in chronic cases. In severe chronic cases, sojourn in an even and sunshiny, but not tropical or subtropical, climate desirable. *Jones.* 111

Inversion of Uterus. TREATMENT. To arrest hemorrhage, place elastic band around base of uterus in vagina just tightly enough to check flow of blood, but no more; take off band when bleeding stopped. Where inversion incomplete, tampon vagina, and perhaps also suture vulva together. Reduction of uterus not to be attempted until shock recovered from; otherwise, mortality considerable and reduction frequently fails. Reduction to be done under general anesthesia, with pelvis elevated. Operator to exert pressure near orifice of one tube with tips of fingers, using rest of hand for counter-pressure. *Zangemeister.* 354

Iritis. TREATMENT. Sinus infection considered responsible for many cases of intra-ocular inflammation. Following treatment

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used with good results in 26 cases of iritis and 5 of idiopathic retinochoroiditis: Saturate tampon, of such size as to fit snugly between middle turbinate and septum and extend from exterior portion of nose to sinus posteriorly, with aqueous argyrol solution (gr. xl-℥j) and introduce. This will drain ethmoid and other sinuses. To drain antrum, place tampons under scroll of middle turbinate and above upper part of inferior turbinate. Allow to remain twenty minutes to one hour. *Manning.* Page 112

Lead Poisoning. TREATMENT. Obstinate lead colic relieved and constipation overcome by giving a tumblerful of olive oil once daily. *Bram.* 47

Leprosy. TREATMENT. Salvarsan used in 5 cases. Caused clinical improvement, cases showing partial or complete resolution of nodules of tissue examined. Effect is not specific or permanent. *Wellman.* 114

Leukemia. TREATMENT. Benzol (benzene) used in 6 cases of myeloid leukemia and 1 of Hodgkin's disease with good results. Given in capsules each containing 0.5 Gm. (8 minims), with same amount of olive oil; at first, 4 capsules daily, after meals, then 2 capsules 3 times daily, later 4 times, and finally 5 times. Leucocyte count gradually lowered to normal, fever disappears, and general condition improved. Effectual where other measures, including X-rays, have failed. *Kiralyfi.* 114

Benzol in doses of 7 minims (0.5 c.c.), increased to 15 minims (1 c.c.), in capsules, after meals and at bedtime, given in 5 cases—4 myelogenous and 1 lymphoid. Results: Rapid fall in leucocytes, resulting in leucopenia in 3 cases; diminution in size of spleen; improved red cell count and hemoglobin; disappearance of lymph-nodes in lymphoid case; improved general condition. Use of drug should be controlled by frequent blood examinations. *Billings.* 293

Marasmus. TREATMENT. Large series of infants with marasmus, congenital or acquired, and premature infants, treated with marked success by external application of codliver oil. Wrap child in oil-soaked flannel from armpits to iliac crests, and cover with oiled silk. Remove flannel, wash skin with soap and water, and reapply flannel, at twelve-hour intervals. Give only water by mouth, in ample quantity. Treatment causes rise in temperature, loss of dryness and wrinkles of skin, and an increase in weight, often considerable. Feed by mouth only when temperature has been normal for a number of days and skin shows increase in fat and water content. *Gray.* 114

Measles. TREATMENT. Following measures employed in 160 cases: (1) hot bath, followed by (2) application of eucalyptus oil to whole body except hands and part of face about mouth, nose, and eyes; (3) mouth irrigated twice daily with weak alum lotion, and glycerin and borax applied to interior of mouth and gums; (4) tonsils and fauces treated with 1: 10 phenol morning and evening, using firm cotton mop on end of forceps; (5) blanket-bath given morning and evening for four successive days, followed by general oil rubbing. Treatment reduced mortality and had favorable influence on course of disease. Careful nursing and maintenance of an even air temperature of 65° F. important accessory measures. *Connolly.* 239

Nephritis, Acute. TREATMENT. Saline proctoclysis advised in acute nephritis in children. Tends to relieve edema and subjective symptoms and improve condition of urine. Normal salt solution, kept at about 110° F. by hot-water bottles surrounding graduated container, passed into rectum through soft-rubber catheter, which is inserted about 6 to 8 inches after a cleansing enema. Procedure also useful in acute infectious diseases and toxemic diseases, as well as before and after ether anesthesia. *Lowenburg.* 171

Following treatment advised: 1. Rest in bed until two weeks after red cells and kidney epithelium disappear from urine. 2. Diet: Limit or exclude proteids; give carbohydrates in large amount, especially sugar, fruit juices and fruits rich in sugar, and gruels of finely ground rice, corn, wheat, or potato starch; also give thoroughly washed butter; withhold salt. Milk to be given only after dangerous stage past. Menu then enlarged gradually, adding at first purées, boiled green vegetables, cocoa, yolk of eggs, etc., and only later white of eggs, river fish, and boiled meat. 3. Fluids: Fruit juices, weak tea (Chinese tea, grass seeds, dried strawberries, or raspberries, blackberry leaves, etc.) or simple pure water. 4. Elementary measures: Theobromine preparations; diaphoresis only where edema. Hot, dry climate acts same as sweat baths. Where other methods fail, puncture of skin. In threatening uremia, venesection and, if latter ineffective, decapsulation. *Von Noorden.* 231

Renal decapsulation practised after appearance of anuria in 2 cases of nephritis due to acute mercurial intoxication. Both cases ultimately died, but not from anuria, urinary function having been resumed. *Tisserand.* 295

Nephritis, Chronic. TREATMENT. Following treatment advised: (1) Exercise to be allowed unless hematuria occurs,—avoiding overexertion. (2) Frequent long vacations. (3) Diet: Limit proteids to amount that will maintain bodily strength (80 to 100 Gm., a third at most in the form of meat, *i.e.*, 130 to 160 Gm. of meat weighed raw); preserved meats, except mild ham, to be forbidden; rest of proteids to consist of milk, eggs and vegetable albumins; amount of fat and carbohydrates to depend upon general nutrition, and should cause neither undue gain nor loss of weight. (4) Salt intake to be restricted in so far as it does not interfere with palatability of food; to be prohibited only where edema. (5) Restriction of fluid

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to 1¼ to 1½ liters a day, except one day weekly, on which amount is raised to 2½ liters. In "secondarily contracted kidney" about 2 liters should be allowed daily. (6) Carefully prescribed gymnastics for the heart. (7) Baths and massage; especially, lukewarm baths followed by cold douches and vigorous rubbing, in alternation with electric or carbon dioxide baths. (8) Diuretin, 7½ grains (0.5 Gm.) three times a day for a month, every third or fourth month. (9) Warm, dry climate, with avoidance of considerable altitudes. *Von Noorden.* Page 357

Nevi. TREATMENT. Use of radium advised. Skin should first be broken over lesion, even if only by lightest electrolysis, to permit of rapid action and therefore small dosage of radium salt. Eradication without scarring *De Courmelles.* 172

Ophthalmia, Gonorrheal. TREATMENT. Stock gonococcic vaccines used in 9 cases, causing prompt reduction of swelling and protecting deeper corneal and conjunctival tissues from invasion. Initial dose for babies, 50 millions; subsequently 100 millions. For adults, double these doses. Local cleanliness and antisepsis to be simultaneously maintained. *Mittendorf.* . 349

Otitis Media. TREATMENT. Where discharge copious, syringe ear gently but thoroughly 2 or 3 times daily with saturated boric acid solution, or, better, mercury bichloride solution, 1: 8000, sometimes later 1: 4000. Where discharge scanty, first cleanse ear with cotton mop, or if acute stage of attack passed drive out discharge by Valsalva method or Politzer bag and wipe out again. Then have patient incline head and pour in bichloride solution, allow to remain ten minutes, dry ear, not very thoroughly, and plug meatus with absorbent cotton. Do this not oftener than once daily. Exceptionally, especially where there is extensive destruction of drumhead, insufflation of boric acid, or of boric acid and aristol or zinc oxide, equal parts, proves more efficacious than the mercury solution. *Theobald.* 116

In long-standing cases of chronic catarrhal otitis media that have resisted usual measures, cocainize parts, insert fine catheter into middle ear, and with syringe inject through it 5 to 10 minims of 10 per cent. argyrol solution. Causes inflammatory reaction and pain for forty-eight hours, but hearing is markedly improved. *Hays.* 296

Following measures advised in chronic otitis media: 1. Restricted diet, mainly of vegetables, fruit and buttermilk; prohibition of red meats and pastries. 2. Calomel, 5 or 10 grains, followed in six or eight hours by 1 ounce of castor oil, and this, in three or four hours, by ½ oz. of magnesium sulphate and 1 dram of sodium bicarbonate in 6 ozs. of carbonated water. Magnesium sulphate, 1 dram, daily before breakfast for from two to four weeks. 3. Sodium or strontium iodide, 1 to 5 grains; sodium or strontium salicylate, 5 to 10 grains, and tincture of nux vomica, well diluted, 3 times daily after meals. 4. Removal of nasopharyngeal and faucial abnormalities. 5. Alkaline wash used with nasal cup two or three times daily to keep nasopharynx clean. 6. Vibratory massage over subglenoid fossa, with gentle inflation of middle ear with vapor of chloroform, iodine or menthol, two or three times a week. 7. Where membrane relaxed and flabby: Paint posterior inferior quadrant with tincture of iodine (25 per cent.) once or twice a week, or with flexible collodion. 8. Small doses of thyroid extract. 9. Thiosinamine in cases with well-defined adhesions. *Stucky.* 297

Pancreatitis, Subacute. TREATMENT. 1. Rest. 2. Limitation of diet. 3. After acute attack of pain has passed off, cholecystostomy. *Archibald and Mullally.* 360

Paralysis, General. TREATMENT. Hexamethylenamine, gr. x (0.6 Gm.) thrice daily, found effectual in preventing retention of urine and avoiding necessity for catheterization. *Baird.* 242

Pediculosis Capitis. TREATMENT. Lay patient on back on bed with head over edge, hair lying in a basin beneath head on a chair. Pour 1: 40 phenol solution over hair into basin and sluice backward and forward until hair thoroughly soaked, especially over ears and at nape of neck. Continue sluicing ten minutes, then lift hair from basin and allow to drain, without drying it. Then swathe head with thick towel or large piece of flannel and allow to remain for an hour. Finally wash hair or simply allow to dry. Method entirely safe with children of 5 years and over. Hair not damaged. *Whitfield.* 173

Pellagra. TREATMENT. Gelsemium followed by much improvement in 5 cases. Fluidextract, 3 or 4 drops every four hours, given. Discontinue drug if ptosis or diplopia occurs. *Blosser.* 174

Pneumonia, Lobar. TREATMENT. Sodium citrate internally found in most cases, especially in children, to cause fall in temperature, pulse, and respiration to normal within twenty-four hours; process in lung clears up soon after, third stage being apparently escaped. Administered in doses of 30 to 40 grains (2 to 2.6 Gm.) in adults every two hours, with a little citric acid or in lemonade. Dose for children to be calculated from 40-grain dose in adults. Drug to be continued till clearing up of process in lung complete. Active catharsis to be established at beginning of treatment. Sodium chloride should be supplied to system in about the normal daily amount (240 grains, or 16 Gm.), with the diet or otherwise. *Weaver.* 116

Administration of calcium chloride in 10-grain (0.6 Gm.) doses every four hours advised, from outset until three days after de-

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fervescence. Patients given it seem to do better than others. *Cornwall.* 175

Creosote carbonate observed to lower temperature considerably and diminish somnolence or delirium in pneumonic processes in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first 3 years; in fifth and sixth years, 20 drops (2 Gm.) and in seventh to tenth years, 25 to 30 drops (2.5 to 3 Gm.). Administered readily in a spoonful of warm milk. To be continued in ½ doses for a week after auscultatory signs have disappeared. *Hunäns.* Page 162

Use of a 20 per cent. solution of camphor in olive oil previously washed with alcohol recommended in both lobar and bronchopneumonia. Mortality seemed lowered by post-trochanteric injections of this. Dose in cases of intermediate severity, 10 c.c. (2½ drams); in grave forms 15 and even 20 c.c. (3¾ and 5 drams), ½ the amount being injected morning and evening. In children 1 c.c. (16 minims) for each year of age is given. *Certain.* 299

Poisoning by Illuminating Gas. TREATMENT. I. First stage, preceding loss of consciousness: 1. Fresh air. 2. Aromatic spirit of ammonia. 3. Effervescent sodium phosphate, to produce eructations and relieve nausea. 4. Oxygen inhalation. 5. Analgesics for headache. 6. Avoidance of violent exertion.—II. Second stage, patient unconscious, but breathing: 1. Howard artificial respiration, rhythmic compression of lower thorax, to assist breathing. 2. Oxygen, preferably under pressure. 3. Camphor, caffeine, digitalis, and strychnine hypodermically. 4. External heat, if indicated. 5. Massage of muscles after aërating lungs. 6. Treatment to be conducted in warm room. 7. If not prompt recovery, venesection and normal saline infusion, or use of "pulmotor."—III. Third stage, patient unconscious and not breathing: 1. Same measures as in preceding stage. 2. Blood transfusion. 3. Artificial respiration by Schäfer method, patient prone. *McCombs.* **44**

Prurigo. TREATMENT. 1. Good hygiene. 2. Generous diet. 3. Codliver oil. 4. To control itching: Baths with starch, sulphurated potash, or creolin; tar, pure or mixed with olive or codliver oil; codliver oil ointment, with betanaphthol or phenol added. 5. To dissipate any coexisting eruption: Sulphur, in soap, solution of potassium sulphide, or thermal waters; codliver oil, covered with bandage and impermeable varnish; codliver oil, 3 parts, and white wax, 1, used as pomade, with or without covering; alternate injections of phenol and pilocarpine; X-rays; thyroidin. 6. In rebellious and severe cases: Soap patient in warm bath and apply a tar preparation or Vleminckx's solution. 7. In stage of lichenification: Radium. *Morris.* **50**

Psoriasis. TREATMENT. Potassium permanganate, 2 tablespoonfuls of a saturated solution added to a warm bath, recommended for acute universal psoriasis. After soaking in this for ten or fifteen minutes, patient to dry himself thoroughly and apply following lotion: Amyli, talci, of each, 40 parts; glycerini, 20 parts; acaciæ, 1 part; liq. plumbi subacetatis, 4 parts; liq. picis carbonis, 26.5 parts; aquæ, 200 parts. Tar baths, preparing by adding 1 or 2 glasses (℥viij or xvj) of an emulsion of coaltar, also excellent, though a tar salve, rubbed in after a bath, is often better. Following paste found efficient in some obstinate old patches: Acidi salicylici, 10 parts; chrysarobini, olei rusci, of each, 20 parts; saponis viridis, adipis lanæ hydrosi, of each, 25 parts. Cover with oiled silk. A lotion of 1 part of lead subacetate solution to 5 of liquor picis carbonis, diluted 3j-Oj, may be used to envelop the part, covered with oil-silk, and allowed to remain all night. *Montgomery.* 175

Pyelonephritis in Pregnancy. TREATMENT. 1. Rest in bed. 2. Elevation of affected kidney. 3. Morphine or codeine for pain. 4. Early catharsis by calomel and salines. 5. Ice-cap to loin. 6. Cream of tartar water internally. 7. Diet: Milk, skimmed if much digestive disturbance, or lactone buttermilk. 8. Hexamethylenamine, gr. v-x (0.3-0.6 Gm.) with lithium or potassium citrate, gr. x, at three- or four- hour intervals. 9. Replace last after forty-eight hours by sodium benzoate, gr. x every two hours, until patient complains of burning in kidney region, when first combination should be resumed. 10. Potassium iodide or phenyl salicylate might also be used. 11. Argyrol (25 per cent.), 3j (4 c.c.), instilled into pelvis in cases persisting more than ten days. 12. In colon bacillus infections, autogenous vaccines, 30 to 50 million once a week, have been successful. 13. Induction of labor, in persistent cases late in pregnancy. 14. Nephrotomy and drainage where definite signs of surgical kidney present. *O'Connor.* 240

Rhus Dermatitis. TREATMENT. 1. To prevent further penetration of poison: Soap and hot water bath of whole body; discard all clothing exposed to the poison. 2. To relieve itching, water as hot as can be borne. 3. Curative remedies: Ichthyol collodion, 5 per cent., painted on lesions three times daily. Magnesium sulphate in saturated solution, applied on gauze, covered with rubber tissue and bandage. Iodine tincture, diluted with 9 parts of water. Hot 2 per cent. (or weaker) potassium permanganate solution; remove stain with 1 per cent. oxalic acid solution. 4. Where pustules have formed: Hot mercuric chloride solution. *Von Adelung.* 300

Scalp Wounds. TREATMENT. Shave scalp for some distance around wound, either dry or wet with alcohol; after area dried, paint with tincture of iodine and wash off surplus with alcohol. In suturing use figure 8 sutures, not too tight. Where parts badly torn, provide free drainage; stitches not to be too

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close together. In all fractures of skull give 40 to 60 grains (2.6 to 4 Gm.) of hexamethylenamine daily. *Harper.* Page 119

Scarlet Fever. TREATMENT. Salvarsan used in 109 cases. Striking effect on throat symptoms, especially in necrosing form, noted. Indicated in severe toxic forms especially. Good results even upon local application. Neosalvarsan not suitable. *Jochmann and Schreiber.* 364

Sciatica. TREATMENT. Good results from X-ray treatment in 11 out of 13 cases. Rays directed usually over lumbar region, sometimes over nerve itself. Small doses only. In cases resisting ordinary medical treatment and galvanic current, radiotherapy should always be tried, especially when sciatica due to compression of nerve-roots. *Delherm.* 365

Sinus Suppuration, Acute. TREATMENT. Apply 4 per cent. cocaine solution on cotton applicator, passed between end of middle turbinate and nasal wall. Follow by a cleansing alkaline solution and an oily spray containing menthol. To reduce pain and promote drainage: Hot, moist applications over whole face. Salicylic preparations, acetphenetidin, and quinine, to be used as indicated. Free catharsis. Irrigation of frontal or maxillary sinuses unnecessary unless there is trouble in antrum traceable to carious tooth. Vacuum treatment by negative air-pressure often useful. *Lemere.* 176

Syphilis. TREATMENT. Following plan advised: Intravenous salvarsan injection, immediately followed by series (12 to 15) of intramuscular mercury salicylate injections, and later by 4 to 6 intramuscular injections of small doses (0.1 to 0.2 Gm.) of salvarsan in sesame oil. After this start new series of mercury salicylate injections, to be continued at increasing intervals during first year of disease. A number of the cases thus treated appeared to be cured. *Eisenstaedt.* 53

Immediate tolerance to neosalvarsan is greater than to salvarsan, but this does not warrant use of relatively larger doses of former. Neosalvarsan to be preferred to salvarsan where latter badly borne and in cases of tabes, paresis, arteriosclerosis, cardiac disease, *i.e.*, in all patients in whom too marked a reaction is to be avoided and where only small doses are indicated. *Bayet.* 115

Salvarsan given intravenously in doses of 0.2 to 0.4 Gm., four to six times at weekly intervals, in 14 pregnant syphilitic women. Each gave birth at term to a living child, generally of normal weight, and none showing stigmata of the disease. *Jeanselme.* 299

Tabes Dorsalis. DIAGNOSIS. Spontaneous fractures not infrequently an initial or early symptom of tabes. *Taylor.* 54

Talipes Equinovarus. TREATMENT. Immediately after birth place strip of zinc oxide adhesive plaster over sole and inner aspect of foot, over correct position of latter, and draw plaster tightly along outer aspect of leg. Place second strip over sole just posterior to base of metatarsals, extending over inner aspect of foot and ending over joint of great toe. Draw firmly, apply to outer side of leg 1 to 2½ inches above external malleolus, and wrap around leg in ascending spiral. Place further strips to cover and tighten the second tension strip, beginning on leg 2 inches above ankle and overlapping until instep reached. Renew dressing, after cleansing foot with ether and alcohol, ten days or two weeks later. Deformity will be corrected in 6 or 8 weeks. Leave foot with stiff-ankle infant-shoe, with 1 strip of adhesive on outer side of foot and leg. *Allen.* 178

Tapeworm. TREATMENT. Thymol in cachets of 0.25 Gm. (4 grains) to be given in the morning on an empty stomach for eight days. Worm usually expelled on third or fourth day. Twenty-three cases treated with success. All alcohol to be stopped during treatment. *Artault.* 366

Tetany. PROPHYLAXIS. In pregnant and puerperal patients and after gynecologic operations, when Chvostek's sign positive and symptoms such as paresthesia of hands, itching, pains in fingers in sewing or writing, and muscular weakness or stiffness present, give calcium chloride in following form: Calcii chloridi (puriss.), ʒv (20 Gm.); syrupi menthæ piperitæ (vel syrupi rubi idæi), ʒij (60 Gm.); aquæ destillatæ, ʒx (300 Gm.). Dose of calcium chloride to be carried as high as 75 to 90 grains (5 to 6 Gm.) a day in adults and, in newborn infants, to 15 grains (1 Gm.). *Kehrer.* 365

Toxemia of Pregnancy. TREATMENT. Free administration of oxygen seemed useful in a number of cases, some severe. May be given either by inhalation or subcutaneously. *Shears.* 242

Tuberculosis, Articular. TREATMENT. Thyroid substance indicated in sluggish cases, especially if evidences of thyroid inactivity present. Dose should be only ⅛ to ½ grain (0.01 to 0.03 Gm.) *pro die*, and patient watched for tachycardia. *Lereboullet.* 179

Tuberculosis, Laryngeal. TREATMENT. Submucous cauterization found to heal 70 to 85 per cent. of cases. Performed with electric cautery. Easier than curettage, and there is no bleeding. Not suited, however, for superficial ulcers on posterior wall, particularly those on the cords, which do better on the old method of lactic acid applications. *Pettit.* 237

Tuberculosis, Pulmonary. DIAGNOSIS. Value of percussion in earliest stage emphasized. With patient lying on back on couch, employ light percussion on terminal phalanx of a finger firmly pressed on spot under examination. Three characteristic dull areas on either side should be sought, which may all be present and of considerable size

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while apex is still very fairly resonant: 1. Opposite inner part of first intercostal space (percussing anteriorly) and inner part of suprascapular fossa (posteriorly). 2. Opposite outer part of same interspace, and outer part of suprascapular fossa. 3. In upper part of lower lobe, percussing posteriorly at end of spine of scapula, and anteriorly in second interspace. *Lees.* Page 54

Quantitative examination of albumin in sputum easily made and useful in diagnosis in doubtful cases. Technique as follows: To 20 c.c. of sputum as free from saliva as possible add a 3 per cent. acetic acid solution slowly, while agitating, until mucin is coagulated; add 2 parts of distilled water to sputum, shake well, filter through several layers of gauze, add a few drops of acetic acid solution, filter, and test filtrate for albumin by any ordinary test. If more than a trace present make quantitative test with Esbach's tube and multiply reading by 3 to get percentage. All active cases give positive reaction. *Works.* 117

TREATMENT. 1. Inhalation of following solution: Creosoti, phenolis, spiritus chloroformi, ana 3ij (8 c.c.); tincturæ iodi, spiritus ætheris, ana 3j (4 c.c.). Two Yeo inhalers to be used on alternate days, cleansed by immersion in boiling water and careful drying. Patient to pour 6 to 8 drops of solution on felt of inhaler *every hour* during daytime, and once or twice during night if awake. Petrolatum or lanolin cold cream to be smeared over nostrils and upper lip before use of inhaler at first. 2. Period of rest in bed at beginning of treatment. 3. Treat digestive disturbances. 4. Give a sufficiency of easily digested food; malted milk, dissolved in scalded whole milk, after each meal. 5. Careful disinfection of mouth 4 times daily, after the milk; antiseptic sprays for unhealthy conditions of fauces. Forty-eight complete recoveries in 70 cases thus treated. *Lees.* 54

Hydrotherapeutic measures, to be employed in 4 successive stages or steps, described: I. Ablution, beginning with water at 90° F., gradually reduced, by 2° daily until 60° F. reached; followed by drying and, if possible, exercise in open air. II. Affusion. With patient standing in water at 105° F., water at 85°, gradually reduced to 60°, is thrown over back and chest. III. Cold rub. With patient standing in water at 105°, a sheet is wrung out in water at 80°, gradually reduced to 50°, and actively rubbed till sheet warm. IV. Drip sheet. Same as last, with sheet dripping; patient rubbed and slapped for two minutes; water at 70° then poured over shoulders, and friction applied till sheet warm; same procedure rapidly repeated over other parts of body. *Baruch.* 56

Olive oil, ½ ounce (15 c.c.) two hours after each meal, increased weekly by ½ ounce up to 3 ounces, found to cause considerable gain in weight. *Bram.* 47

Sodium cinnamate subcutaneous injections found superior to cacodylates in all varieties of cases in which a general tonic effect required. Initial dose, contents of 5 c.c. (1¼ drain) ampoule, including 0.5 Gm. (⅝ grain) of the cinnamate; this to be rapidly increased by one-half, bulk of solution, however, being kept the same. Injections given daily. *Laborde.* 118

Counterirritation with mustard sometimes found very effective in night-cough. Soft capsules containing beechwood creosote, 1 minim (0.06 c.c.), oil of sandalwood, 5 minim (0.06 c.c.); oil of sandalwood, 5 grains (0.12 Gm.), given 4 or 5 times daily, may be of decided benefit for cough. *Gordon.* 119

Importance of hyperalimentation in cases of tuberculosis in pregnancy where it is decided not to empty uterus emphasized. Use of following mixture advised to increase appetite: Lysol, 1 part; ichthyol, 10 parts, and glycerin 20 parts. Begin with 1 drop and increase by 1 drop at each dose up to 30 drops, which is maintained. Preparation dropped into half tumblerful of water and taken just before meals. *Stewart.* 175

Four to 8 capsules, each containing 4 grains (0.25 Gm.) of liver substance, *pro die* found effective in arresting or preventing return of hemoptysis. In cases with low arterial tension and asthenia, epinephrin, 5 to 10 drops of 1: 1000 solution daily for five to ten days, followed by like period of rest, or of adrenal substance, 1½ to 5 grains (0.1 to 0.3 Gm.) daily, is indicated. Bayle secures good results by administering 100 Gm. (3½ ounces) of fresh hog spleen every day. Loeper and Esmonet advise pancreatin, 2 to 4 Gm. (3ss-j) in keratin-coated capsules of 0.25 Gm. (4 grains) each, daily in first and second stage cases, and especially in patients with involvement of serous membranes; improves appetite and general condition. *Lereboullet.* 179

Sluggish, afebrile cases of tuberculosis, especially with profuse expectoration, are often greatly bnefited by creosote. *Fishberg.* 180

Addition of tuberculin to sanatorium treatment found to increase chances of clearing sputum of tubercle bacilli by about 17 per cent. in early and moderately advanced cases. *Bardswell.* 363

Treatment of cough in phthisis described: (1) For nervous cough: Swabbing throat with 30 per cent. potassium bromide solution, or taking 15 grains (1 Gm.) of this salt in water. (2) For pharyngeal cough: Gargling with betanaphtholis, gr. iij (0.2 Gm.); sodii boratis, ℥ss (15 Gm.); aquæ menthæ piperitæ, ℥vij (24 c.c.); aquæ, q. s. ad ℥xxxv (140 c.c.). If inflammation present, pharynx to be swabbed with: Cocaine hydrochloridi, gr. ij (0.12 Gm.); resorcinolis, gr. xv (1 Gm.); glycerini, ℥j (30 c.c.). Following gargle also useful: Sodii salicylatis, ℥vj (24 Gm.); antipyrinæ, ℥j (4

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Gm.); aquæ laurocerasi, aquæ aurantii florum, āā ʒss (2 c.c.); glycerini, ʒiiss (75 c.c.); aquæ destillatæ, q. s. ad ʒxxxv (140 c.c.). (3) For laryngeal cough: Orthoform powder or a solution of balsam of Peru; following draught: Tincturæ bryoniæ ♏x (0.6 c.c.); tincturæ aconiti, ♏xx (0.2 c.c.); tincturæ belladonnæ foliorum, ♏x (0.6 c.c.); syrupi opii, ʒj; aquæ, ʒiv; one teaspoonful every two hours. (4) For tracheal cough: Terpini hydratis; pulveris ipecacuanhæ et opii, āā gr. ij; to be taken in cachet two or three times a day. (5) For gastric cough, 2 drops of opium tincture or ⅙ grain (0.01 Gm.) of codeine ten minutes before each meal. *Robin.* Page 363

Tuberculosis, Surgical. TREATMENT. Use of "injectio trypsini" recommended for tuberculous abscesses of all kinds, synovial hydromata, sinuses, arthritis, etc. After an insignificant local reaction, pain, tenderness, and tubercle bacilli disappear, pus becomes more fluid and undergoes absorption, and healthy tissues proliferate. Dilute the preparation as supplied with 2 to 10 parts of sterile saline solution, inject strictly subcutaneously 1 c.c. (of pure preparation), and distribute beneath skin by gentle massage, one to three times a week. Where abscesses, puncture with trocar and inject; where sinuses, inject into surrounding tissues in several places; where ulcers, under their bases; where synovial hydromata, into the sheath, and where tuberculosis of joints, in part directly into joint, partly into surrounding tissues. Undiluted injection used in the joint cases. *Baetzner.* 301

Typhoid Fever. TREATMENT. Olive oil useful as a food in 1- to 3- ounce (30 to 90 c.c.) doses 3 times daily. Also useful as a laxative; high injections of lukewarm oil may be given. *Bram.* 47

Collective statistics as to results of use of typhoid vaccines show 423 cases, with only 5.4 per cent. deaths. Dosage used by author: Initial hypodermic injection of 500,000,000, repeated at four-day intervals as long as required, and increased by 100,000,000 each time. Stock-vaccine injections made just under skin over insertion of deltoid or over tensor vaginæ femoris. *Callison.* 57

Series of 65 cases treated without milk, on diet consisting of broths, soups, gruels, gelatin, eggs, sugar of milk and butter. Gelatin given almost ad libitum—6 ounces of 5 per cent. solution, flavored with lemon, vanilla, etc., five times daily. Mortality low, persistent diarrhea only in 4 cases, hemorrhage in 4 and perforation in none. *Johnson and Watt.* 181

Iodine, in aqueous solution or as tincture—the latter in doses of 15 to 25 drops daily in a mixture of cinchona and malaga wines or in milk—given in 44 cases. Cases with profuse diarrhea, distention or nausea appeared to improve, rapid recovery usually occurred, and mortality seemed to be lowered. *Arnozan and Carles.* 304

Ulcers. TREATMENT. Value of dry treatment of wounds, burns and ulcers emphasized. Keeping a leg ulcer exposed to air, lightly dusted with aristol and stearate of zinc, is an effective treatment. Patient should lie down, elevate leg and protect it from flies and dust with thin layer of gauze. *Pitfield.* 285

In chronic leg ulcers, wash affected surface and surrounding area with 90 per cent. alcohol, and apply following ointment on sterile gauze, with firm bandage from foot to knee: Acidi borici, ʒij (8 Gm.); adipis lanæ, petrolati, ana ʒij (60 Gm.). Repeat washing with alcohol next day, give whole leg massage with alcohol and stiff brush, and reapply ointment. After a few days, scrape base and edges of ulcer clean. Use the wool-fat ointment for two or three weeks, then 5 to 10 per cent. thymol iodide in cold cream. Continue alcohol treatment, and cauterize granulations with silver nitrate if necessary. *Wade.* 356

Urethritis, Gonococcal. TREATMENT. Fluidextract of aconite recommended for relief of congestion and irritation; 1 minim every one or two hours for intelligent patients and every three or four hours for unintelligent. Interval to be doubled as soon as tingling, perspiration and a feeling of relaxation appear. *Pedersen.* 305

Urticaria. TREATMENT. Epinephrin given subcutaneously in doses of 8 minims (0.5 c.c.) in 6 cases. Two doses always caused complete fading of rash and cessation of itching in ten to twenty minutes. Recurrence probable in an hour or two unless treatment continued. *Swann.* 164

Vincent's Angina. TREATMENT. In mild cases, best results from use of trichloracetic acid. Membrane first removed by hydrogen peroxide and wiping with cotton swab; ulcer then anesthetized with 10 per cent. cocaine solution, and trichloracetic acid applied a few minutes after. Usually 3 or 4 applications at 2- or 3- day intervals necessary. Tincture of iodine preferable where ulceration extensive. For pain, orthoform. Carious teeth to be cared for. General condition also to be improved. *Halstead.* 58

Vomiting of Pregnancy, Pernicious. TREATMENT. Sodium bicarbonate, 5 to 50 grains (0.3 to 3 Gm.) a day, recommended. Part of it often vomited, but some retained. Continue for a week after vomiting stopped. Bowels to be well cleared by colonic flushing. Veronal also found useful. *Lyon.* 59

Whooping-cough. TREATMENT. Pertussis bacterin used in 40 cases. Disease not shortened, but bacterin causes, after preliminary slight aggravation, well-marked, and sometimes remarkable, symptomatic improvement in a certain proportion of cases. Best results produced at the height of the disease. Give 2 or 3 full doses—20 to 50 million bacteria each—at five-day intervals.

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In young infants moderate doses should be given early; they diminish severity of disease and minimize complications. *Zahorsky.* Page 48

Pertussis vaccine used in 17 cases. Best dose found to be 40 million bacteria, given in buttocks even to an infant twice a week, or in severe cases in old children, 3 times a week for one week only. If much benefit noted, intervals prolonged, and vice versa. Many cases improved after single dose. No reaction from injections, local or general. Vaccine should be used only in undoubted cases of the disease. The younger the infant, the more rapid the cure. *Scott.* 174

TREATMENT. 1. Following preparation recommended: Ichthyolis, ʒiiss (10 Gm.); glycerini, ʒss (15 Gm.); liquoris calcis, ʒiiss (10 Gm.); olei amygdalæ amaræ, gtt. iij; olei anisi vel menthæ piperitæ, gtt. x; syrupi, q. s. ad ʒiiiss (100 Gm.). Dose in children up to 1 year of age, 4 to 6 teaspoonfuls; up to 2 years, 3 to 4 dessertspoonfuls; 3 to 4 years, 4 to 5 dessertspoonfuls; 5 years and upward, 4 to 5 tablespoonfuls. These doses can be exceeded in obstinate or long-standing cases, or those complicated with capillary bronchitis or bronchopneumonia. 2. As adjuvant in young children: Instillations of weakly mentholated oil in nose. 3. Emetic and purge at beginning of treatment. 4. If bronchopulmonary complications should appear: Mustard baths and antiseptic inhalations. 5. Where hemoptysis: Inject diphtheria antitoxin and, this failing, hepatic extract. *Naamé.* 306

Wounds. TREATMENT. Treat all wounds on which great force has been exerted, and especially those contaminated by soil and dirt-covered objects, as if infected with gas bacilli. Leave open where possible and irrigate thoroughly with peroxide. Bandage lightly, if at all. Inspect frequently and irrigate often. On first sign or symptom of infection, take smear and examine for *B. aërogenes capsulatus.* Open wound freely, if sutured, and if on limb place latter in bath or irrigate continuously. If condition extensive, expose field widely to air by free incisions. (Do not employ peroxide in full strength or inject in confined spaces or directly under tissues.) *Cramp.* 42

Wounds of face and hands should be closed with subcuticular stitches, especially in women. To prevent subsequent stretching of scar, close superficial fascia with interrupted fine silk sutures before applying subcuticular stitches. After injuries to soft parts of hand, cleanse quickly by immersing in gasolene; after latter has evaporated, sterilize parts with tincture of iodine and alcohol. *Harper.* 119

Application, in gunshot wounds, of steaming towels wrung out in water as hot as can be borne, during thirty minutes night and morning before wound is dressed, recommended. To be continued till all inflammation subsides. *Griffith.* 110

Use of paste made by adding a few drops of mercury bichloride and ammonium chloride solution (1:2000) to small quantity of zinc oxide recommended for slight wounds, abrasions, injection punctures, indolent ulcers, sores about the face, etc. Where much stinging and itching about abrasions, substitute 2 per cent. phenol for bichloride. *Hiden.* 182

Scarlet red ointment, 2 to 4 per cent., advised for acceleration of healing in granulating postaural operative wounds, after radical removal of rodent ulcers, etc. *Allan.* 359

Book Reviews

LE POST-PARTUM NORMAL (The Normal Puerperium). By Prof. Constantin Daniel, of Bucharest. Part I: Generalities; the Reproductive Organs. Octavo of 137 Pages. Paris: A. Maloine, 1912.

The author of this work holds that the phenomena of the puerperium do not constitute a physiological state, but a special condition intermediate between the physiological and pathological, comparable in all respects with the period of convalescence in general diseases and with the stage of cicatricial repair in surgical lesions. It is often difficult to ascertain whether the post-partum period is or is not being complicated by truly pathological factors. Only by close study and accurate knowledge of the processes taking place after childbirth—until the end of lactation—can one promptly recognize and effectually prevent abnormalities during this period. Accordingly, Prof. Daniel has carried out observations on the post-partum period in over 5000 cases, and now presents the results of his research in a continuous record, in combination with previously known facts.

Part I of the work includes first of all a general description of the puerperium—its subdivisions, clinical features, duration, diagnosis, prognosis, etc. Among the author's conclusions are, that absence of fever (*i.e.*, with an axillary temperature less than 37.5° C.) is a *sine qua non* of the normal puerperium; that uterine tenderness, even where there is no fever, signifies a certain amount of sepsis, and that throughout lactation the body is still in an abnormal state dependent upon the puerperium. The remainder of Part I deals in detail with the reproductive organs during and after the puerperium. The anatomy of the uterus at this time is taken up, detailed measurements of the organ on different days after childbirth being given, and the progressive histological changes in the uterus and surrounding organs then thoroughly discussed. The final section of this part is devoted to a clinical

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study of uterine involution, the causes of altered rapidity of involution, the lochia—their appearance, amount, duration, variations, odor, abnormalities, significance, cytology, chemistry, and bactericidal properties; and, finally, the after-pains—their causes, clinical characteristics, duration etc. Part I, as a whole, may be said to embody a very comprehensive study of the anatomy and physiology of the puerperium and the lactation period.

NEW POCKET MEDICAL FORMULARY, with an Appendix. By William Edward Fitch, M.D., Editor of "Pediatrics"; Adjunct Attending Gynecologist, Philanthropian Hospital; Formerly Lecturer on Surgery, Fordham University School of Medicine; Assistant Attending Gynecologist, Presbyterian Hospital Dispensary, New York City, etc. Pp. 474. Philadelphia: F. A. Davis Company, 1912. Flexible Leather, $2.00, net.

In this useful formulary the various diseases and symptoms are listed alphabetically and a wide variety of prescriptions is given under each. The formulæ are all those of medical men of ripe experience, and the author of each, with few exceptions, is given below it. A number of the more important recently discovered drugs are included. Under most of the more important disease headings, a general description of the treatment is given before the prescriptions, the work being thus rendered more complete as a clinical therapeutic guide. The total number of formulæ is 1900, and their selection has been good. Some of the endings of the official Latin names of drug preparations are not given with strict accuracy—the nominative case, *e.g.*, being used where the genitive is required. On page 6 appears "Fluidextr. pilocarpinæ," which should, of course, be "pilocarpi," and on page 7 the English name "Infusion" is given twice instead of the Latin genitive "Infusi."

In the appendix are given formulæ and doses for hypodermic medication, formulæ for fluid foods, diet lists compiled from the standard works on dietetics, a differential chart of eruptive contagious diseases, an extensive table of differential diagnosis, incompatibilities, baths, miscellaneous emergencies, etc. On the whole, the formulary is a well-planned and very complete one, and cannot fail to prove of value to the practitioner.

LEITFADEN DER ERSTEN HILFE (Manual of First Aid). Ein Samariterbuch von Dr. J. Lamberg, Chefarztstellvertreter der Wiener Freiwilligen Rettungs-Gesellschaft. Pp. 275, with 1 Colored Plate and 190 Text Illustrations. Berlin and Vienna: Urban & Schwarzenberg, 1913. Cloth, $1.25, and 15 cents postage.

The first 60 pages of this volume are devoted, for the most part, to a brief account of human anatomy and physiology, intended to prepare the lay reader for the information subsequently given on "first aid." The succeeding portion of the book deals with the first aid in acute conditions such as fainting, apoplexy, epileptic and hysterical attacks, infantile eclampsia, spasm of the glottis, colic, the asthmatic paroxysm, alcoholic intoxication, heat-stroke, partial asphyxia from various causes, including drowning, as well as in poisoning by various drugs, etc. Part IV is on first aid to the wounded, including the control of hemorrhage in various regions of the body, the treatment of burns, that of epistaxis, hemoptysis, etc., of poisoned wounds, congelation, acid and electric burns, abrasions, brain concussion, shock, fractures of various bones, the removal of foreign bodies, bandaging, etc. Part V deals with methods of rescuing the drowning, persons in fallen houses, those poisoned by gases, persons in burning buildings, etc. In Part VI is considered the transportation of the sick and in Part VII the care of the sick in their home. The book is complete in its way, simply and practically written, contains many excellent illustrations, and is a valuable work to place in the hands of the laity. Original and useful suggestions concerning emergency treatment will also be found in it by the physician.

SOLIDIFIED CARBON DIOXIDE in the Successful Treatment of Cutaneous Neoplasms and other Skin Diseases, with special reference to Angioma, Epithelioma and Lupus Erythematosus. By Ralph Bernstein, M.D., Clinical Instructor in Skin Diseases, Hahnemann Medical College, Philadelphia; Consulting Dermatologist to the Women's Southern Homeopathic Hospital. Pp. 95, with 41 Illustrations. Hammond, Ind.: Frank S. Betz Co., 1912.

This little work deals with the history, effects, mode of production and uses of solid carbon dioxide, which, the author considers it undeniable, is the remedial substance *par excellence* in the treatment of cutaneous neoplasms, both benign and malignant. The apparatus employed in its preparation and clinical use is very clearly described and illustrated in two of its forms—the Goosman or American apparatus and the "Vienna carbon dioxide outfit." In another section are considered the preparation of cases for the use of carbon dioxide, the details of its application, the after-treatment and the after-effects. The remainder of the book—about 60 pages—is devoted to a consideration, in alphabetical order, of the various superficial disorders for the treatment of which the agent is suitable. The time of application, degree of pressure, frequency of repetition required in each affection are given, and the author's personal experiences with carbon dioxide succinctly related. Numerous illustrations showing conditions before and after treatment are included. The book should prove very useful as a concise working manual.

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The General Field

Conducted by A. G. CRANDALL

The Educational Endowment

It is reported by the graduating class of a well-known Eastern university, that the average expenses for the four-years' course were $4200.

A large number of benevolently disposed people have from time to time contributed to establish various endowment funds for different schools and colleges, believing that their generosity was likely to result in permanent benefits to struggling students for a long time to come.

It is a significant fact that a struggling preparatory school with little or no endowment will often extend a much more cordial welcome to poor students than will be the case after the school has acquired sufficient endowment to place it in a position of comparative independence. The unfailing impulse under such circumstances seems to be to attempt to secure the patronage of a wealthy class of students, to raise the rates in order to provide an atmosphere of exclusiveness and to exhibit a diminishing degree of cordiality toward the class of students on whose patronage they depended at an earlier period. As proof of this statement it is only necessary to refer to the fact that the students' expenses at some of the most richly endowed preparatory schools and universities are 50 if not 100 per cent. higher than they are at some of the smaller institutions. Of course, the excuse is that the endowed institutions can provide greater advantages, but the fact remains that the graduates of the smaller colleges undoubtedly average fully as high in natural ability and in future usefulness as do the graduates of the institutions on which gifts have been lavishly bestowed by people who felt that in doing so, they were conferring privileges upon generations of students yet unborn.

It is likely that there will be an increasing degree of curiosity manifested before long as to why the students' expenses at various private educational institutions should steadily increase in proportion as the endowment fund increases.

To Abolish Colds

A large number of people hardly ever know what it is to be ill except for the ordinary "cold."

Some of these although naturally vigorous are occasionally afflicted with the most acute form of the common catarrhal cold, while other people who are comparatively delicate seem to be relatively immune to this form of disorder.

It is now proposed to eliminate the cold from the scheme of affairs by the employment of a vaccine which will confer immunity for a period of six to twelve months. This method of treatment is, of course, premised on the theory that a cold is the result of bacterial infection, although it often happens that in a family circle there will be one or two individuals who will be frequently afflicted with colds and that the others will be practically immune year in and year out, although exposed in every way to infection.

If colds are the result of bacterial infection, it is desirable that the lay public be educated to the importance of a relative segregation of the patients afflicted with the severe cold. It often happens that if one member of the family is affected the cold will run an

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apparently epidemic course throughout the family. This is unscientific and contrary to common sense, provided that the common cold, so called, is the result of a bacterial infection.

In view of many untoward consequences of a succession of colds in an individual, it is extremely desirable to avert such a tendency, and if a certain type of unfortunates can become obnoxious as typhoid carriers, why is not the person who is constantly distributing the bacteria of the common cold also an objectionable member of society?

The conclusion naturally reached in this matter is that if the common cold is of bacterial origin only a very reasonable amount of precaution would result in greatly diminishing the spread and prevalence of these disorders. But until more is known as to the real cause of the common catarrhal cold, and a genuine specific germ has been "caught with the goods," the vaccine method of conferring immunity is likely to cause little excitement.

The Advertising Philanthropist

It is a singular perversity of human nature that people who need to be uplifted do not care to have too much said about it.

Incidental to a vice campaign in Philadelphia, it has been announced on every hand that the poor and unfortunate who were rescued could be provided for on application to certain people who have made all necessary preparations to carry on rescue work in the most approved style. Strange to say there are no applicants.

It is also reported that quite a number of missionaries, who make few if any announcements for publication, but who have equipped themselves with somewhat cramped quarters in connection with their work, have been positively overrun with unfortunates who drift into their place and drift out again, securing a place to sleep and something to eat, but receiving no advice whatever unless they ask for it.

On account of another singular perversity of human nature, people who do not offer their good advice unsolicited are very likely to have frequent opportunities to offer counsel where it is very badly needed.

There are occasions where a brass band can be employed with a reasonable degree of propriety, but in rescuing the foolish and unfortunate from the result of their folly and misfortune, wind instruments can be appropriately dispensed with.

Have They Lost Their Nerve?

For a century or two, the British Government has been held up to the admiration of the world because of the inflexibility and impartiality with which their laws have been administered.

The arrival of a British man-of-war in some remote section of the globe where law and order were at a discount and social chaos in full swing was sufficient to send the cold chills up and down the backs of whoever was responsible for the aforesaid chaos.

There are no evidences anywhere on the map of any diminution of the wholesome respect inspired by the British ensign among the heathen or semi-heathen of various complexions and nativities, but, like the elephant who creates terror among the larger animals of the jungle but goes into hysterics at the sight of a mouse, John Bull seems to lose his nerve entirely when a hysterical woman starts out to build a bonfire or smash some windows.

A militant of the masculine gender, after creating disorder of a most sensational kind in the House of Commons,

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is reported to have been ejected from the premises and warned never to come back again. It is hard to conceive of a State legislature in this country which would submit to interruption of this order and not make sure that the person responsible for the outrage was placed in some secure retreat where his activities could be restrained.

The lenience, not to say timidity, shown in the official attempts to control the fanatical women so conspicuous recently in England is so incompatible with the usual British policy as to be very mystifying on this side of the Atlantic.

Child Labor

Much of the argument as to the employment of children is confusing and entirely aside from the real facts.

Those who are opposed to the employment of young children are criticized by the manufacturers who profit by this form of servitude as being visionaries who would turn young children loose upon the streets without occupation. On the other hand, those who are so criticized accuse the employers of desiring to profit by the enslavement of young children at a time when such employment is likely to stunt their growth physically and mentally.

There is a good deal to be said on both sides of the subject.

The one essential point, however, which should not be lost sight of, is that, while children may be employed to a very considerable extent without physical harm in the open air, it is contrary to reason to assume that they can be taken into factories at a tender age, kept in monotonous employment and confined in a vitiated atmosphere without being materially injured.

The boy who works on the farm may be called upon to perform a good many hours of labor in a week without detriment. He is breathing outdoor air and in most cases securing abundance of wholesome food. But this is a very different thing as compared with the kind of employment and environment he is subject to when taken into a factory at an immature age.

It is unfortunate that children should be allowed to run at large without occupation in the city streets. There are many opportunities for them to grow up as idlers and irresponsible citizens; but the first natural right of any child is to be permitted to reach mature physical development and start out in life with a normal physical and mental equipment. The child slave in the factories, however much he may be kept from idle habits, is being robbed of his birthright of health and an optimistic outlook upon life, and all those who profit by such a system should be exposed, as they are being exposed at the present time, to public scorn.

Poultry House Eugenics

Some researches of great significance are reported from France. An observer has been experimenting with successive generations of the hen. Starting with hens accustomed to an active aggressive existence with a vegetarian diet, he found that properly fertilized eggs hatched to the extent of practically 100 per cent. Changing to a meat diet and observing the effect of same during six generations of hens, he noted a vastly lessened egg production and a reduction in the percentage of eggs hatched from the original 100 per cent. to 18 per cent.

Comparing the results of this experiment with the observations of the various human families of which he had knowledge, he reached the natural and logical conclusion that an easy indolent life with excessive meat diet was suffi-

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cient to account for the steadily decreasing birth rate among these families and the development of obesity, gout and arthritism.

The logical conclusion to be drawn from these observations is that nothing is so prejudicial to any form of animal life as the habit of indolence.

Hot Weather Hints In the Newspapers

Promptly every summer, on the elevation of the local temperature to 80 degrees Fahrenheit, the editor of the evening newspaper seems called upon to admonish his readers on the folly of eating any substantial meals in real warm weather. He explains in a manner indicative of vast research on this subject that all necessity of food for heating purposes having been removed by kind nature, all that is required is to provide bodily energy. He therefore advocates a very moderate indulgence in any kind of food and especially the avoidance of meats, which provide the energy.

It will be noted that such suggestions seldom come from the medical profession, who recognize the need of greater care in the selection of a well-balanced menu during the heated term than at other seasons.

The horse, like his owner, is disposed to free perspiration during the heated term. It is apparent, therefore, that equine requirements as to foods which give out heat are brought to a minimum when only a very moderate amount of exercise is required to make the horse sweat profusely. Yet the owner of a team of horses which is being worked every day in hot weather would promptly ridicule the idea that he should cut down on the amount of oats supposed to be required to keep the horse in condition at the average season of the year.

Once in awhile there is a doctor who has the courage of his convictions sufficiently to publish a protest in the public press when suggestions more or less absurd in their reasoning are offered to the large number of people who read newspapers to the practical exclusion of most everything else. It is to be regretted that there are not more instances of this kind.

Indexing the Nerves

Two members of the faculty of Harvard Medical School have been experimenting with a view of establishing a method by which the degree of irritability of the nervous system can be recorded. Experiments thus far conducted reveal the not surprising evidence that a man who gets up in the morning with that dark-brown taste is in a position to make a new high record every little while.

The beneficial possibilities of such a machine are beyond calculation. The auburn-haired schoolmistress, teaching the first grade with fifty or sixty wigglesome subjects under her dominion, should have a record taken at very frequent intervals. In this way she can learn the importance of acquiring equanimity under trying circumstances.

The man who, by a margin of a couple of minutes, misses a train for an important engagement should be conducted immediately to some quiet spot and his nervous record taken. The results of the object lesson thus afforded would undoubtedly have a most cooling and equalizing influence.

It is to be hoped that a machine for taking these records can be devised which is simple of operation and of moderate expense. If so, it should have a very extensive sale.

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Original Articles

THE TREATMENT OF ARTERIOSCLEROSIS.*

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A COMPLETE discussion of the treatment of arteriosclerosis within the limits of a paper is manifestly impossible. The condition is so widespread, so prolonged, and leads to so many complications that it is coextensive with a considerable fraction of the practice of internal medicine and the specialties. It will therefore be necessary to leave out of account for the present (and I trust it may be left out of the discussion) symptomatic treatment, or the treatment of complicating conditions such as abnormalities of blood-pressure, degeneration of organs following circulatory accidents, and primary kidney disease.

The reason that so little advance has been made in our knowledge of the treatment of this disease is that it labors under a misnomer, and that attention has been directed to the structure of one set of organs, the blood-vessels, while, in fact, the tissues of the whole body are equally the seat of the disease. The clinical condition known as arteriosclerosis no more essentially consists of sclerosis of the arteries than typhoid fever consists of ulceration of the intestines. But ulceration of the intestines in typhoid fever is a local manifestation of a general disease, and, in the same way, thickening of the arteries is the result of a general condition. There may be a localized ulceration of the intestines constituting a primary disease; and there is a form of inflammation of the arteries that seems to be local. But primary ulceration of the intestines has nothing to do with the ulceration of typhoid fever, and endarteritis has nothing to do with the clinical condition known as arteriosclerosis, which attacks a large proportion of the human race after middle life.

* Read at the Fourteenth Annual Meeting of the American Therapeutic Society, held in Washington, D. C., May 5 and 6, 1913.

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Arteriosclerosis is a disorder affecting the cells of the whole body, including the blood-vessels, in such a manner that at length circulatory difficulties arise, and the heart, blood-vessels, and kidneys become conspicuously involved. But coincidently, and not consecutively, the kidneys, liver and lungs undergo damage. This may be due to other things, but it seems to me that in the vast majority of cases it can be traced to the effect of substances that are, or have become, poisonous to the cells; and, furthermore, that these substances are ordinarily derived from proteins taken into the body as food. *It is not the effect of proteins on the individual, but the reaction of the individual to the proteins,* and when the process begins it is not because any change has taken place in the particular protein, but that something has taken place in the individual which makes him susceptible to damage by it. The sensitiveness to proteins is an important chapter in pathological physiology. It is very familiar when it presents itself in the form of food idiosyncrasies, though, strangely enough, the vegetable proteins, which cause the greatest discomfort in their reaction, cause the least harm. A person is safeguarded if the foods to which he is sensitive cause discomfort.

Arteriosclerosis is likely to begin when, through some accident of food poisoning, severe illness, nervous shock, or some unknown incident, the cells of the body become sensitive to particular proteins found in customary food. From that time on, provided the ingestion of this food is continued, there is a continuous subsymptomal anaphylaxis leading to irritation, and finally to changes in the tissues—perhaps to replacement of some of the cells by connective tissue. This takes place throughout the body: In the blood-vessels, leading to arteriosclerosis, from which the disease takes its name; in the heart, leading to cardiosclerosis; in the kidneys, leading to loss of kidney tissue; in the liver; in the lungs, and in the nervous structures. The circulation of blood through the damaged body becomes a greater and greater task, and the damaged heart and blood-vessels undergo changes and hypertrophy from functional overactivity. The impaired organs lead to failure of internal secretions and of general metabolism, and the person who started with a sensitiveness to a single protein, after twenty-five years is found presenting the picture of the terminal stages of so-called Bright's disease.

If this be a true picture, a logical conclusion is that the treatment of arteriosclerosis must consist in the discovery and removal from the dietary of such protein, or proteins, as are unfriendly to the individual person; and as the absorption of protein is profoundly affected by the condition of the intestinal canal, much attention is justifiable to those conditions that have been discussed of late under the titles of "intestinal putrefaction" and "autointoxication."

These considerations have led, with me, to the development of a system of diet that I call for my own convenience, the *few-protein diet.* So long as the person is eating all kinds of proteins it is very hard to draw conclusions, for even a small quantity of an offending protein may be sufficient to cause a continuous cellular irritation. And, curiously, there is some foundation for the belief that sensitiveness to a particular protein may be overcome if that pro-

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tein be massively administered. The irritation seems to be due to a moderate quantity.

As a practical matter, the treatment of arteriosclerosis founded upon the conception of the disease outlined above consists in a modified form of such a plan as one would follow in acute food poisoning. Just as in acute food poisoning castor oil is universally and eternally acknowledged as the remedy without a peer, so also does it find an important place in the management of conditions of long standing and gradual onset. In the presence of well-developed arteriosclerosis and of the picture of subsymptomal continuous anaphylaxis, an ounce of castor oil is ordered at intervals of forty-eight hours for three doses. Then after a week another dose is given, and as long as the person is under observation a dose is ordered at intervals of not less than one month. Out of the diet are taken all eggs, fish, meat and fowl, as well as all soups, except vegetable soups without stock. Cheese is allowed, as furnishing protein in a safe form, and later chicken may be allowed if experimentally it is found that the blood-pressure does not rise as a result of it. In small doses iodine seems to do as much good as in larger ones. The reduction of blood-pressure by drugs for the sake of repressing this symptom of the disease has been sufficiently criticised to render its consideration unnecessary. On the other hand, nitroglycerin is the great symptomatic remedy for all emergencies arising in the course of the disease, whether it be attacks of dyspnea, pain, vertigo, or even edema of the lungs.

Out-of-door exercise is essential to the welfare of the sufferer from this condition. The cells of the liver, kidneys, and probably, in a measure, all the organs suffer impairment by their reaction to the protein that in the individual instance causes the disease. There is no diuretic so valuable as exercise in cirrhosis of the kidney, and, for the cirrhotic liver, no stimulant as efficient. Out-of-door life is lifesaving, particularly to the dweller in cities. It will not prevent arteriosclerosis in the country dweller, but even here it will allow vices of eating that would kill the city man in short order.

For the cure of arteriosclerosis, the underlying secondary causes must be removed. Among these, mental stress is the most important, and the development of a sound philosophy of life is required in combination with the castor oil, the "few-protein" diet, and the out-of-door life.

DISCUSSION.

Dr. J. Madison Taylor, Philadelphia, spoke of the importance of early recognition of the disease. Dr. Bishop had said in a former paper that there were practically no manifestations in the early stages to bring the case to the attention of the physician. This being true, it was fortunate for the individual if he had some other form of breakdown, because then the arteriosclerosis might be recognized and treated in its incipient stage.

Dr. Edward D. Fisher, New York, spoke particularly of the etiology. Arteriosclerosis, he said, was not a general disease of the whole body, but primarily a diseased condition of the vessels. At first it did not affect the body as a whole, but was a localized condition. Gradually, however, it might affect one organ, or part, after another—the heart, kidneys, nervous system—until the body as a whole suffered.

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Alcohol, overeating, gout, etc., were only predisposing causes in most cases. Laboring men were especially susceptible to arteriosclerosis, but as a rule they were neither excessive eaters nor drinkers. But they were hard workers, and work and heredity were important factors in the etiology, whether the individual was a laborer or a financier at his desk. Everyone was furnished with vessels good for a given time under proper conditions. If he used them conservatively he might live out his allotted time. If he did not, his life was shortened accordingly. Treatment must of necessity be symptomatic only. The best that could be hoped was to stay the progress of the disease. A proper diet, open-air exercise, a quiet life and freedom from worry and care—all of these were important factors. The diet should be regulated to suit the need of each individual patient. It should not be too strict where the patient was weak or where his occupation required great exertion. In case of a laborer, for example, it would not do to take away meat. General principles of treatment should be broken as conditions necessitated.

Dr. Robert T. Morris, New York, suggested that the response of the blood-pressure to certain proteins might be utilized as a test for arteriosclerosis in its early stages.

Dr. Osborne emphasized the danger of changing the diet suddenly or radically. The same was true of exercise and other factors ordinarily employed in the treatment. He had obtained good results from the use of iodides.

Dr. Spencer L. Dawes, Albany, said that the salines or calomel were preferable to castor oil. He had found the after-constipating effect a decided objection to its use. He agreed with Dr. Fisher as to the span of life of the vessels. The same might be said of the heart.

Dr. George Herbert Evans, San Francisco, said that greater efficiency in treating the condition must be based upon a better classification of the patients along etiological lines. He had been impressed with the frequency with which syphilis occurred in arteriosclerotic patients, and he did not believe that the Pacific coast was worse than the Atlantic coast in this regard. Cases ascribed to overwork, overeating, etc., were not infrequently the results of syphilis. The disease should be eliminated as an etiological factor before treatment was instituted.

Dr. Morris inquired whether the poison of syphilis were not a protein poison.

Dr. F. M. Pottenger, Los Angeles, Cal., said that Thayer had shown a few years ago that typhoid fever was not infrequently followed by hardening of the arteries. In his own work he had observed that some hardening was usually present in tuberculous patients who had suffered from clinical tuberculosis for two years or more.

Dr. J. J. Kinyoun, Washington, D. C., said that in the post-mortem examination of tuberculous subjects he had found marked arterial changes in 40 per cent. of the cases. These must have been due to causes like alcoholism, syphilis, etc., as they evidently antedated the tuberculosis.

Dr. Bishop said that in his own experience no cause could be assigned in about nine-tenths of the cases. In the remaining one-tenth the cause was alcohol, lead, syphilis, or one of the other causes ordinarily cited. Too much attention was paid to the advanced cases, and not enough to the insidious cases, although the latter were the most important. Bacterial arteriosclerosis was due to protein poisoning, as suggested by Dr. Morris. Heredity was only a matter of susceptibility after all. He commended Dr. Osborne's definition of iodine as a thyroid stimulant rather than an alterative in these cases. He did not believe in excluding all protein from the diet. The effort should be to ascertain the particular protein causing the trouble, and eliminate it. It was sometimes revealed by the special craving of the patient for it when it was withdrawn. He cited the case of a patient with blood-pressure of 230, who suffered from shortness of breath and the usual symptoms. He put him upon a single protein diet, and the blood-pressure fell to 200. The man, however, developed an uncontrollable longing for meat, and he went around from one physician to another until he found one who allowed him to eat it. As a result, his blood-pressure went up, and he felt better

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for a time, but soon became worse and died. As to laborers, many of them had syphilis and all of them overate. As to salines, a circular issued by the physicians of Carlsbad advised against sending patients with advanced arteriosclerosis there, as they did not do well. It was the custom to send them to Nauheim, in other words, to put the patient into the mineral water, and not the mineral water into the patient. Table salt and all salts were unfriendly to arteriosclerosis. He saw many patients who had taken salines for years, and it was necessary for him to overcome the prejudice in their favor.

ADALIN: A SEDATIVE AND HYPNOTIC.

By PAUL BARTHOLOW, A.B., M.D.,

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ADALIN is, in many respects, somewhat similar to veronal. But whereas adalin may be prepared by the action of bromide and diethyl acetic acid on urea, veronal may be produced by the action of esters of diethylmalonic acid on urea. Adalin easily admits of the double effect of urea and brom-diethyl-acetylbromide; to the effect of the former is added that of bromide, and the original hypnotic becomes a sedative.

Adalin is, chemically, brom-diethyl-acetyl carbamide, or $C(C_2H_5)_2Br.CONH.CONH_2$. It is very insoluble in water, but has the merit of possessing no odor and little taste.

Its effects are not easy to describe. They are mainly those of bromide and urea, that is, sedative and diuretic. Those who have not observed the last-named effect have perhaps not examined very carefully the quantity of urine. But there is another effect, the hypnotic, and if large doses—15 to 20 grains—are administered, the drug may be hypnotic in both the literal and metaphorical signification of that word. We will take up these effects in order.

SEDATIVE EFFECT.—This effect, which generally proceeds best from moderate doses of 5 or 10 grains, is the most remarkable property possessed by any drug not a pure opiate. I have observed this in a large series of cases, indeed, in considerably over 100 instances. The drug is, however, not adapted for such conditions as mania, in which there is great motor excitement. Its function is to give quiet to the agitated,—to brace the nervous system. This expresses with precision the sort of effect under discussion, as the following case will demonstrate it objectively:—

A. T., 24 years old. The father and mother are living and well, and no disorder has ever visited the family. They are, however, "nervous,"—a common affliction among the Russian Jews from whom he is descended. The patient himself is nervous and disposed to hypochondria. His hands tremble slightly, he has fits of nervousness in which he is almost helpless, he sleeps poorly, and his appetite is bad. He has had gonorrhea once, and a chancre of some sort. The Wassermann reaction was negative. The question, then, of syphilis was neither better nor worse than it had been. Indeed it would be curious to know what a positive Wassermann could mean in a case like this, where the chancre had existed and had disappeared under treatment together with all other signs of syphilis.

The physical examination was without result. It chanced that the patient had

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been bitten in the leg by a dog over a year before. This accident led him to come to see me at the Health Department. The dog had lived quietly for six weeks subsequently, when it disappeared. Inasmuch as there was no danger I advised the patient to think no more about the matter. Instead, he became extremely nervous, dreaming of mad dogs, and being perpetually tormented by fancies and pains at the point where he had been bitten. He read of hydrophobia in the newspapers and in books, and finally became convinced that the pains and restlessness were in his case certain signs of the disease. He was often told that there was no danger, that hydrophobia does not wait, that the dog had lived at least six weeks after the bite, whereas it would have certainly died in two if it had been rabid; but even this reasoning brought no quiet. The administration of adalin, however, in doses of 5 grains four times a day was efficacious; the nervous feelings, the restlessness, dreams, and pains, for these were imaginary, disappeared. It was necessary to give the drug for several days, but, at length, the patient was entirely relieved. He had previously been unable to meet people, transact business, and perform any set task.

Many similar cases, about 40 in all, were treated with the same success. They were all possessed by the fear that a dog-bite would be followed by hydrophobia. When the fear began to subside the remedy was discontinued, and no effects of any kind were seen, except one or two instances of drowsiness in children.

The other cases in which the drug was used may be thus classified: Neurasthenia, nervousness, sleeplessness, dysmenorrhea, bronchitis, "overwork," alcoholism. To specify the effects of adalin in these cases, it is fairly certain that they are most distinct in the presence of nervous symptoms and that they are less obvious in alcoholism, though the drug is very effectual in such different affections as bronchitis and dysmenorrhea. In these it seems to do good by its sedative action, which appears to be general, since it is observed in such widely differing conditions.

A practical physician might at this point inquire: How is it that a remedy is brought forward and used in so many cases wherein people may become habituated to its effects? Is it not true that the continued use of a drug constitutes the evil mentioned? It may be explained that doses of 5 grains three times a day suffice for sedative purposes, and that these do not cause the necessity for more and can be discontinued without effect. With large doses, *i.e.*, of 15 grains and more, however, it is a different question. The effects of these are felt for two days, and there are two results attached to the use of large doses of adalin which will serve, in some measure, to modify the general impression in regard to its possible dangers. One I have observed in a case in whose powers of personal observation I could repose perfect trust. If a large dose of adalin is administered, say, at night,—a dose of 15 or 20 grains,—no effects worth mentioning are felt the next day, but on the *third* day there is a sense of languor, sometimes of headache, but generally of heaviness in the head, well called by the Germans *"Kopfdruck."* This is due to the retention of bromine, a notable feature of the action of adalin when given in large doses, and easily avoided if only 5 grains are used. This feeling, however, is almost immediately banished by a small amount of acetphenetidin in effervescing Vichy. It is therefore a good thing to combine the two drugs when adalin is given in

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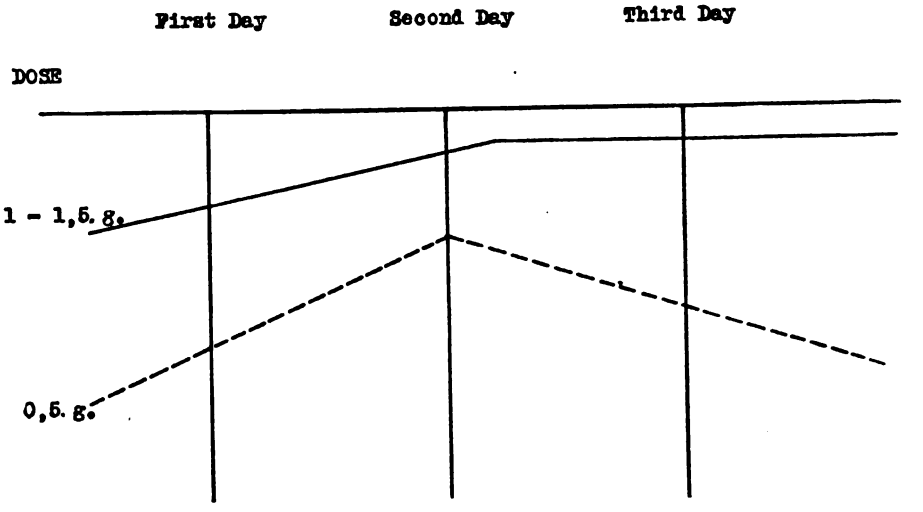
large doses, for it raises the blood-pressure, and some of it evidently remains in the stomach as hydrobromic acid and should be neutralized.

The retention of bromine is a curious subject. I have represented it diagrammatically by the two lines in the accompanying drawing, which show with a fair degree of accuracy how the bromine leaves the body after small and after large doses. In the first case excretion is rapid, reaching its height on the beginning of the second day; in the second case, excretion follows a line almost parallel for two days, when the fall begins.



Some of the bromine is excreted by the respiratory tract, and this may be the reason why Professor Rabow speaks of adalin as a bronchial remedy (Keuchhustenmittel). It is obviously of value in bronchitis, laryngitis, and spasmodic cough. A small quantity of it may remain in the stomach, a characteristic property of all bromides, properly speaking. In the urine it appears in three forms, according to the researches of Hoppe and Seegers and of Impens. In the hands of the former it took no very definite shape—they found constant amounts of inorganic bromide—but Impens, with more care, found both organic and inorganic bromide, and an *"ætherlösliches"* compound of bromine, doubtless adalin itself. The chemical fractions from which these quantities are calculated are not described by Hoppe and Seegers, and their work conveys the impression of some degree of perplexity or leaning to one side in matters of experiment. The line in the diagram indicates clearly and precisely the effect of an excess of bromide, using a general term, for we have an effect which follows for two days,—an effect known and distinguished by the state of the brain, and its not disagreeable depression of ideas. Urea affects the brain in a similar manner, and doubtless has something to do with the effect, but it is difficult, if not impossible, to describe the bracing as well as depressing effect of large doses.

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Thus we see that a certain quantity of bromine—of adalin shall we say?—remains in the body. It is impossible to tell exactly how long, but the effect is one of increasing hypnosis. It is therefore necessary to administer a saline purgative, such as sodium or magnesium sulphate, or to rest satisfied with the signs of bromism. These may be entirely avoided, and large doses given without such annoyance, if the simple precaution is taken of keeping the bowels well opened. This may be done by means of a saline draught every morning before breakfast and as long as adalin is given. The following case, already alluded to, illustrates both the effects of large doses and the way to get rid of them. It is described by von Hueber (Münchener med. Wochenschr., 1911, p. 2615):—

A woman, 32 years old, took 10 and then 8 tablets of adalin. There was profound sleep, which lasted thirty hours, but no disorder of pulse, heart, or breathing. The stomach-tube could not be used and the physician adopted the resource of producing very active purging. The sleep arising from the large dose gradually ceased, without any ill-effects whatever, and we may doubtless infer that in this way the intestine was rid of the excess of adalin.

Impens has found in the urine an unconjugated compound, which is most probably adalin unchanged. But the vast amount of empirical instances that we have, and in particular the circumstance that a saline purge prevents the symptoms of bromism when we are obliged to administer adalin for a long time, indicate that it remains in the bowel. I have observed this fact in several hundred instances, in private practice, at the Health Department, and elsewhere.

The nervous effects, which are not observed after small doses, may appear when large doses are given. Under these circumstances, adalin should be prescribed in an effervescing mixture containing sodium bicarbonate and tartaric acid. This relieves the sense of heaviness and the "Kopfdruck."

DIURETIC EFFECT.—I have *never found albumin or sugar* in the urine after adalin, nor did von Hueber in his case. I have had, however, more opportunities of observation, and must regard the fact of quite extraordinary importance. There is no doubt that the quantity of urine is slightly increased,—an increase probably due to the action of urea.

CONCLUSIONS.—It is quite obvious that:—

1. Adalin is a very powerful sedative.
2. It is strongly hypnotic in doses of 15 to 20 grains.
3. These doses alone may accumulate, which accumulation is prevented by a daily saline purge.
4. Very large doses may be the cause of some heaviness of head, which may be prevented by an effervescing draught containing a small dose of acetphenetidin.

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GASTROINTESTINAL SYMPTOMS OF DISEASES OTHER THAN GASTROINTESTINAL.

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In but a very brief manner can I hope to refer to the enormous number of cases that would properly fall under the above heading. My object is, in the first place, to call attention to the great variety of disease producing gastrointestinal symptoms, and secondly, to urge a more thorough and careful search for the origin of these gastrointestinal symptoms beyond the gastrointestinal tract.

Every physician has many times been called upon to treat a supposed gastrointestinal disease because the symptoms—at least from the patient's standpoint—are those of some disturbance in the course of that tract, only to find, after perhaps several weeks of gastrointestinal treatment, including rigid dieting and stomach washing, much to the patient's discomfort, that the real cause of the trouble was far removed from the gastrointestinal tract, and that but little, if any, of the treatment had been of the slightest benefit to the patient, the diagnosis having been so thoroughly a symptomatic one.

The point I am endeavoring to make may be illustrated by brief reference to a few cases and also to two classes of disease that are especially prone to cause gastrointestinal symptoms. Under the latter heading, two diseases are still sufficient and at the same time are among the best examples of what I mean, viz., tuberculosis and pneumonia. Many other conditions might be included, such as pregnancy, diabetes, tabes, the various toxemias, nephritis, and syphilis, but the two named will suffice for our purpose. Every one is thoroughly familiar with the marked dyspeptic symptoms that precede for months and sometimes years an oncoming acute attack of tuberculosis. These symptoms are usually typically diagnostic, not only to the patient, but to the physician, and while symptomatic treatment is not only indicated but necessary and beneficial, yet, were we more energetic in endeavoring to locate the tuberculous condition underlying these symptoms, not only would our treatment of the digestive disturbance be successful, but also the slumbering tuberculous condition would receive much more prompt attention at our hands with a materially greater benefit to the patient. As to pneumonia: All are aware of the marked gastrointestinal symptoms that so frequently precede, accompany and follow an attack of bronchopneumonia, while the abdominal symptoms that precede an attack of lobar pneumonia are too well known to need any more than a passing comment. The abdominal pain, the distended colon, the vomiting and frequently the constipation that are but the forerunners of a severe lobar pneu-

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monia, only too often mask the symptoms of the real disease until it is too late either for abortive or prophylactic treatment. The illustrative cases follow:—

CASE 1.—D. A. This man's symptoms were gastrointestinal purely and simply for years, and it was not until after a week's residence in the Stomach Hospital, with frequent stomach washings—all of which proved to be negative—that we learned that the long years of dieting and digestive mixtures had been of no account because the real trouble was a severe attack of hemorrhoids and a frightfully neglected oral cavity, both as to the number of teeth and the condition of those present. All symptoms disappeared upon correction of these two conditions.

CASE 2.—J. S. I reported the details of this case in full about a year ago. In this patient the true condition proved to be tuberculosis of the kidney, partial relief of which promptly brought about a reduction in the gastrointestinal symptoms.

CASE 3.—F. A. Complained for months of severe gastric symptoms, which he believed to be due to two things: first, a long continued habit of tasting chocolate coatings, and second, an attack of ptomain poisoning. Last fall, after residence of the patient for a week in the Stomach Hospital, with several stomach washings and restricted diet, the laboratory work showed his case to be one of advanced parenchymatous nephritis, from which he died.

CASE 4.—Mrs. C. Admitted to the Stomach Hospital suffering from severe intestinal symptoms and a history of their presence for many months. The same routine clinical and laboratory procedures disclosed a stone in the ureter, removal of which caused disappearance of all symptoms.

CASE 5.—Mr. F. Complained of the existence for years of marked "stomach trouble," as he called it, but a careful study of his case disclosed an enormous stone in the bladder, the removal of which cleared up all the gastrointestinal symptoms.

CASE 6.—Mrs. R. Complained of severe gastrointestinal symptoms, extending over a period of three years, from which she sought relief. Careful observation, with laboratory study for a week, disclosed the presence of gall stones, hernia following a previous operation for gall stones, and a carcinomatous cervix. In this case, simple removal of a portion of the uterus was sufficient to produce marked improvement, and the probabilities are that with the performance of the balance of the surgical work indicated, the patient, so far as the gastrointestinal symptoms are concerned, will receive pronounced relief.

These are but a few of the cases that have come under observation within the last six months, and they have caused me to wonder how many patients I have treated in the past for supposed gastrointestinal trouble, usually with little and only temporary relief, probably only to lose them and have them go elsewhere, because I permitted myself to be misled by the symptoms and failed to realize the underlying cause, which doubtless in many cases was far removed from the gastrointestinal tract. I am sure these few illustrations will cause many of you to recall similar examples occurring in your practice and, I hope, will stimulate you, as they have done me, to take nothing for granted; to look upon the gastrointestinal tract as being more often the victim than the real offender and to search further before prescribing for the symptoms except in so far as may be required to give immediate temporary relief. In this connection I must add, however, that in my experience the further search necessarily consisted largely of laboratory work. In other words, in cases of gastrointestinal disturbance where the disease producing the symptoms is outside the gastrointestinal tract, clinical examinations will often fail to disclose it, and it will

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only be by the aid of the laboratory, in conjunction with having the patient for at least a week under absolute control and continuous observation, that one will be enabled to make a correct diagnosis and institute the treatment actually needed.

ELECTRIC AND OTHER DRUGLESS TREATMENTS OF LOCOMOTOR ATAXIA.*

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There is probably no disease in which an unfavorable prognosis is more frequently made and which therefore drifts more regularly into the hands of practitioners of non-medical cults than locomotor ataxia. This is the more to be regretted because undoubtedly physical manipulations frequently will not only remove the most annoying symptoms of this affection, but in a great many cases will cause such a surprising general improvement that the patients will absolutely expect an ultimate entire cure and therefore gladly continue the treatment.

While we can often cure diseases "symptomatically," no conscientious physician will promise "absolute" cures,—especially not in cases usually considered incurable. We should never, therefore, promise to make an "absolute" cure of the sclerotic spinal cord, nor even a complete removal of all the serious conditions caused by it; but we can conscientiously promise an amelioration, or even a complete "symptomatic" cure of all except possibly the eye- and patellar reflex symptoms, together with, in all cases, a decided prolongation of life and usually an avoidance of the frequent final paraplegia, etc., I feel satisfied that co-operation between the patient and the skillful medical physiotherapist, if the latter is consulted early enough and remains in charge for a sufficient length of time, will almost invariably result in such surprising recovery that the physician himself is apt to doubt the accuracy of his diagnosis, however scientific, well-considered and thorough it may have been.

It is a well-known fact that frequently cases of locomotor ataxia will improve temporarily, or even permanently, without any internal or external professional treatment, and occasionally will remain so, notwithstanding that the most gloomy prognoses had been made. At other times patients will apparently improve wonderfully after using home exercises, gymnastics and occasionally after undergoing almost ridiculous treatments at the hands of quacks. In some of these cases undoubtedly there must have been a mistake in diagnosis,

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* Read at a meeting of the Northern Medical Association of Philadelphia, January 24, 1913.

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while on the other hand there is no question that all exercises and external manipulations and applications producing an intense cutaneous hyperemia will relieve congestions, assist in removing inflammatory deposits and loosening stiffened joints, whether in the extremities or in the sacrolumbar or intervertebral regions, and will therefore necessarily benefit patients suffering from lack of co-ordination, ataxic or paralytic symptoms. Again, there is no doubt that many cases diagnosed as tabes dorsalis in the pre-ataxic stage are in reality cases of multiple neuritis, or some other disease instead of tabes; their cure, therefore, which so often is entirely unexpected by the practitioner, naturally swells the number of the alleged cures of locomotor ataxia, but incorrectly so.

The etiology, pathology, and usual treatment are so well known that I shall not take up your time mentioning them. Nor shall I argue upon the question whether or not locomotor ataxia is always due to syphilis, as is so frequently claimed and just as often denied by leading authorities. It may suffice to call attention to the recent investigations of Mendel and Tobias, who, after an examination of 151 women, came to the conclusion that there is no locomotor ataxia without syphilis, and that, if a virgin ever suffers from this disease, she must be the victim of either hereditary or extragenital syphilis, in many cases undoubtedly innocently acquired.

I shall first give you a short account of the different physical methods employed in the treatment of locomotor ataxia by some of our prominent men and then present a complete account of my methods:—

Dr. Noble M. Eberhart, of Chicago, says: "In genuine tabes dorsalis cases a cure should not be looked for by the electric or other methods, but marked relief is not unusual." He uses sharp, high-frequency sparks along the spine, over the buttocks, abdomen and along the backs of the legs, followed by ten-minute treatment on the autocondensation couch or pad. He also employs brief stimulating treatments with sparks to the anesthetic parts or areas, together with mechanical vibration, while in hyperesthetic areas he uses mild sparks and vibration, daily or thrice weekly. Relief and improvement of gait are procured in many cases. He considers, however, cases of apparent complete cure to have been multiple neuritis instead of tabes.

Dr. Wilfred Harris asserts that he has obtained occasional diminution of the anesthesia and sensation of numbness in the legs and corresponding improvement in the ataxia gait by means of the faradic current. When this was applied energetically with the wire brush, occasionally the entire anesthesia and analgesia disappeared, while the gait and the vision improved in the most serious cases. Nevertheless he expresses very little confidence in electricity as a complete cure for locomotor ataxia, though he has more confidence in Fraenkel's method of re-education of co-ordination and in the treatment with hot baths.

Dr. W. J. Morton, of New York, states that the franklinic current has caused the swaying symptoms, the ataxia, the pains, the anesthesia, the bladder- and the sexual- symptoms completely to disappear, while the field of vision has been enlarged greatly and the gait become normal. The knee-jerk does not return.

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Dr. C. S. Elliott, of Kansas City, considers electricity a most efficient remedy for tabes dorsalis,—not exactly for arresting the disease permanently, but for the relief of some of the symptoms, especially the pains and the ataxia. If it is used in the initial and ataxic stage, he thinks that electricity may check or at least modify the course of the disease. He uses galvanism to the spine, 10 to 20 milliampères for ten minutes, twice weekly at first, and later on but once a week. He states that *Rumpf* places the faradic anode to the sternum, while the cathode is placed to the skin of the back and of the lower extremities. Elliott prefers the static current to both the galvanic and the faradic. For pains he uses sparks. Next to sparks he seems to have the most confidence in the sinusoidal current, which he applies five to ten minutes every alternate or third day for about six weeks, using a foot-plate and a neck-electrode. He claims cessation of the lightning pains, improvement of the ataxic gait and station, and promotion of the well-being of the patient.

Dr. Wm. Benham Snow, of New York, considers the treatment of the cord most important. He uses the static-wave current with a long, narrow electrode over the spine for twenty minutes at a time. The pains are relieved and in many cases the progress of the disease is eventually arrested. Snow also uses the wave current with vibration for the muscular contractions in the arms and legs, but does not depend entirely on electricity for the tension removal in order to obtain this relief and to remove the anesthesia; he teaches the patients to walk and orders daily gymnastic exercises. The same wave current and static sparks are used by him for the pains, girdle- and bladder- troubles. He has little faith in his ability to relieve the Argyll-Robertson pupil and the patellar reflex symptom. He claims, however, that fully 75 per cent. of his cases have experienced a marked improvement from the first, while at least 50 per cent. have shown an arrest of progress of the disease. The girdle symptom seemed to be the slowest to yield.

Dr. Chas. S. Potts, of Philadelphia, uses galvanism to the cord every other day, ten minutes at a time, for six weeks, following it by dry brush applications to the extremities; he then stops for six weeks, after which he again employs the treatment for another six weeks. He stops treatment altogether after several months, if no improvement ensues. He employs massage, rest and forced feeding in conjunction with the electric treatment, and approves of Snow's static-wave, spark, and brush treatments.

Dr. J. M. Martin, of Dallas, Tex., strongly recommends general high-frequency treatment for locomotor ataxia and similar conditions, applied in many ways—as autocondensation, autoconduction, or with glass vacuum or metallic electrodes.

Dr. S. H. Monell, of New York, states that static electricity is of great efficiency in the treatment of tabetic patients, and that such treatment, if applied correctly, will effect more than is generally supposed. Whenever no specific history exists, he uses no drugs, but depends entirely upon personal hygiene, and galvanic and static electricity. Galvanic electricity is used for the cord and static for the relief of symptoms and general and local nutritional effects. He claims that static electricity is never contraindicated in this dis-

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ease and that it never fails to do some good. For congestion and advancing inflammation he uses the sedative spray; for pains, the spray and light sparks. In advanced conditions of sclerosis he applies sparks to the spine; for burning and throbbing localized pains he uses a good deal of spray followed by sparks.

Dr. Sinclair Tousey, of New York, states that the lightning pains have been treated more or less successfully with cocainization by cataphoresis; more successfully, however, by *Balsamoff* before 1905 with hydroelectric baths, followed by the application of the current locally in the painful region; that *Rehn, Dimmern and Raymond* relieved the anesthesia and pains with radium; that *Lieberman* applied the ultra-violet ray alternately to the cervical, lumbar and sacral regions, with improvement in the pains and co-ordination, while Tousey himself obtained relief from the use of Schnee's four-cell baths and from general galvanic baths in the lightning pains. He also obtained great lasting improvement, though not a cure, with X-ray and high-frequency applications to the spine. He warns, however, against the use of the X-ray to the spine unless the operator is experienced. Tousey applies the X-ray over the spine at the lower level of the scapula twice a week in such a manner so as to produce slight redness of the skin after three weeks, then stops three weeks, after which he takes it up again. This treatment is combined with vacuum electrode vibratory currents, connected with one pole of the X-ray coil, applied to the lower extremities and along the spine for fifteen minutes three times a week, on the same days as the X-ray and on one extra day each week. Mild repeated localized X-ray and high-frequency applications to the lumbar enlargement of the spinal cord may do good, in Tousey's opinion.

Dr. Albert Abrams's treatment of locomotor ataxia consists of re-education exercises, preferably without apparatus, this observer claiming that the patient's faulty movements are due to the fact that the "movement memories which he had in health no longer subserve his purpose, for which reason a new series of movements must be acquired corresponding to the impressions which are received through neurons which are still intact." In addition to the exercises, Abrams employs sinusoidalization of the vertebræ for the re-education of the defective movements, applying a large electrode to the region of the sacrum and the interrupting electrode over definite spinous processes, so as to bring into action definite muscle groups of the lower extremities. He cautions, however, against strong currents, lest hypertonicity cause muscle-bound, still more useless legs. For the pains Abrams considers diathermy practically a specific and he usually applies the diathermic currents (high-potential, oscillating current) to the vertebral sites corresponding to the seat of pain, as established by him; he places the electrodes on either side of the spinal column. He also claims relief of the paroxysmal pains and crises from amyl-nitrite inhalations and especially from concussion of the 10th dorsal and 2d lumbar spines, stating that the eminent authority on locomotor ataxia, *H. Jaworski,* of Paris, reported remarkable results from this method. The success is due in Abrams's opinion to the production of an increase in the vascularity of the cord. Concussion of the 10th dorsal spine, according to Abrams, causes an increase in the number of red blood-corpuscles varying from 100,000 to 600,000 per cubic

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millimeter, while concussion of the 7th cervical spine causes an average reduction of 500,000 red blood-corpuscles. Concussion, or interrupted sinusoidalization over the 2d lumbar spine will cause temporary return of the patellar reflex. Concussion of the 10th dorsal vertebra or sinusoidalization may improve the sight by increasing the blood-supply to the eyes. Another alleged excellent method of treatment of tabetic symptoms, used by *Denslow* and reported on by *Jaworski,* is called "urethral reflexotherapy" and consists in rapid dilatation of the urethra, which is claimed reflexly to produce after a few séances a strong sensation of warmth in the feet, a reappearance of deep sensibility, an amelioration of gait and a disappearance of the pains. Denslow's reported results were confirmed by Jaworski and numerous other enthusiastic observers.

Dr. M. L. H. Arnold Snow, of New York, in the latest (1912) revision of her book on "Mechanical Vibration," recommends static sparks for the pain, friction-sparks for anesthesia, and the static wave current with a long spinal electrode for improving the nutrition of the cord. She furthermore treats dysthesia or anesthesia with rapidly interrupted vibration by means of the disk vibratode applied over affected areas, and constipation with abdominal and rectal vibration, while the stomach itself is vibrated for gastric troubles. In addition, vibration is practised with the ball vibratode over the left 6th, 7th, and 8th dorsal nerves near the spine. This author also uses prolonged vibration of the affected muscles, *i.e.,* applies it with moderate pressure over the motor points, particularly on the back of the thighs and legs, and likewise employs deep interrupted vibration in the intervertebral spaces of the segment of the cord controlling the affected muscles, besides advising co-ordination exercises. For the contracted pupils and the diplopia she uses ball vibratode vibration for three minutes between the 2d, 3d, and 4th dorsal vertebræ. She also believes in radiant heat and light and hydrotherapy.

I shall now give my personal experience and mention my technique for treating locomotor ataxia, not limiting myself, however, to electricity, but describing the combination methods, which in my hands have proved most efficient.

Whenever I could trace a syphilitic history, whether inherited or acquired, I formerly always tried the old mercurial and potassium iodide internal treatment, but I must admit that I found it useless as a rule in these cases and soon abandoned it, especially as I found that my patients had been uselessly drugged for years to such an extent that they came to me because, disgusted with internal medication, they had heard from others that they would be relieved by physical manipulations and without being compelled to swallow nauseating drugs. It is, of course, quite possible, and might be truthfully argued, that I was too impatient and did not give drug medication a proper trial, especially as I never used salvarsan. My only excuse and defense is that the few patients whom I have had the opportunity so far to treat for this disease successfully,—too few for me to make or to expect you to recognize claims to universal improvement and invariable success,—absolutely refused to be interested in any further attempts to drug them, particularly as I could not conscientiously assure them that I had ever obtained any surprisingly happy results from medicinal treatment of

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their disease in the last twenty-seven years. On the contrary, every drug-treated patient progressed steadily toward the apparently invariable final paraplegic condition, with intestinal paralysis, etc., and ultimate death. I may have been unusually unsuccessful in the medicinal treatment of this disease; but certainly there was nothing in the results obtained which would encourage me in wasting any more efforts on it, when other measures promised so much more immediate benefit and permanent results to my patients,—taking hold at once, causing them to co-operate where they had formerly from lack of faith opposed, and having an immediate favorable psychological effect, followed soon after by a feeling of well-being, and a gradual, slow, but certain improvement in almost all of their symptoms.

Before describing my personal single or combination drugless treatments for this interesting disease, it may not be amiss for me to call attention to the fact that we physiotherapists are usually accused of never mentioning reasons for using electricity and other modalities, or, in other words, of using our measures indiscriminately, without considering or probably even knowing their physiological actions, contraindications, dangers, etc.

We are perfectly willing to admit that electrotherapeusis, in particular, is still young, and that there are a great many things about electricity we do not know, *e.g.*, to begin with, we do not even exactly know what electricity is, though we have our varying definitions and theories. I personally lean toward the opinion that electricity is nerve-energy or nerve-force, or at least can be readily converted into it under favorable circumstances. I base this belief on the fact that a nerve and an electric wire are practically alike in construction and in the way they do their work. A nerve, we were taught a great many years ago, consists of the internal axis-cylinder, which conducts the nerve energy from the brain or cord to the muscles, exactly as the inside copper-wire (of, *e.g.*, a telephone wire) conducts the telephonic message from headquarters to its destination; the axis-cylinder is surrounded by the white substance of Schwann, an insulating fatty substance, just as the inside copper wire is surrounded by rubber insulation; again, the white substance of Schwann is inclosed in the tubular membrane, as the rubber insulation is surrounded by or enclosed in an outside protective covering. Thus, nerves and telephone wires have been shown to be constructed alike and to do their respective work alike. Is it therefore improper to conclude that they are identical, and that electricity is nerve-force or nerve-energy, or at least becomes such at times when we use it to replace or waken up absent or dormant nerve-energy, and by doing so succeed in restoring lost use of muscles and even of entire limbs? If this be admitted, why can we not go farther and become reasonably convinced that electricity will also waken up, as it were, or revitalize a dormant cord or even a brain? It might be argued, of course, that we cannot reach the brain or even the cord with electricity. Quite a number of neurologists argue *pro* and *con*. The fact remains, however, that results in the treatment of cerebral and spinal diseases point decidedly toward the favorable conclusion. It is therefore not at all surprising that the most wide-awake, progressive and up-to-date men in our profession, here and abroad, enthusiastically agree with me in the conclusions I have arrived at, viz., that

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we are not only getting favorable results from the scientific employment of electricity and other drugless methods locally (*i.e.*, can redevelop muscles, restore function to joints, tone up the viscera, promote metabolism, oxygenation, nutrition, elimination, etc.), but actually and decidedly influence the cord itself and possibly to a minor degree also the brain.

After these somewhat emphatic, but, let us hope, not overenthusiastic remarks, I shall now take up the different principal symptoms of locomotor ataxia and describe my technique in treating them, after which I shall take up the constitutional treatment:—

1. *The Lancinating Pains.*—Over twenty-seven years ago my attention was called to the case of a young man suffering from tabes dorsalis due to hereditary syphilis, as I claimed. This claim was emphatically denied by many of our leading men, who ridiculed my diagnosis, "hoping," as they expressed themselves, "that the patient might only be suffering from neuritis." In spite of this hope the young man, who started with the lancinating pains as his first and practically only symptom, gradually developed all the other symptoms and finally died in a paraplegic condition, with paralysis of the bladder, rectum, etc. A post-mortem examination showed gummata in almost every organ, including the brain and cord, and conclusively, but unfortunately too late, settled the disputed etiology. A concurrence in diagnosis of the prominent physicians, and treatment with antispecifics, might possibly in the early stage have cured the young man and saved his useful life. We had no Wassermann reaction or salvarsan at that time, of course. I was then treating the lancinating pains with the Paquelin cautery, with the red-hot poker, or by freezing with ice and salt. Now I use 12-ampère, 500 candle-power, or 9-ampère, 400 candle-power, radiant heat and light therapeutic lamp treatment over the seat of the pain until an intense cutaneous hyperemia is obtained, or, instead of this, static or high-frequency sparks, as severe as can be endured. At other times, again, I find that I get equally good results in the way of pain relief from the hyperemia-producing Bier suction-cups, or by applying mechanical vibration with deep and long-continued pressure. It is a well-known fact that a short rapid pressure stimulates and is irritating and painful, while a long continued, deep pressure is benumbing and analgesic. Again, Abrams's and also Arnold Snow's methods of applying concussion, or sinusoidalization, or vibration (intervertebral) to the spinal segments (located by the spinous processes) corresponding to the painful areas, frequently give immediate and highly satisfactory analgesic effects, as does also Abrams's method of freezing by means of ethyl chloride and ether. The study of the segmental distribution of referred pain (Abrams) is exceedingly interesting. For practical purposes I would mention that we can usually find the sensitive spots on either side of the vertebral column if we take the trouble to examine the patient carefully, and can know then where to treat locally. As a rule, however, I employ the other methods in tabes. Another highly sedative, analgesic and almost always successful local treatment for the pains consists of stabile galvanism, the positive pole being applied to the painful spot and the indifferent pole to the abdomen or back, or any other convenient point. An equally efficacious procedure consists of the application of the

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high-frequency vacuum tube to the spots, in close contact, in which case one obtains a soothing, analgesic, anesthetic, myasthenic effect, while the sparks, suggested above, act as a counterirritant and entirely differently,—although in this case we can frequently obtain equally satisfactory results from either treatment.

2. *The Ataxic Gait.*—This is, if anything, even more annoying to the sufferer than the pains, because of its similarity to the gait of a drunkard, for which it is unfortunately frequently mistaken. There is probably no treatment for this annoying symptom more successful than the Fraenkel co-ordination exercises, without apparatus, and the von Leyden exercises, with apparatus. If the patient is bedridden, one should teach him or her to bring the legs to the headboard, to cross them, to touch the front of one leg with the toes of the other alternately, teach abduction and adduction of the legs, to raise the body forward, etc. If the patient is out of bed, in an institution or private practice, if von Leyden's tenpin, pigeonhole, gangplank, or stairway apparatus is available, one should employ it cautiously, watching the patients carefully so as not to overtire them or let them fall; if some of the numerous leg and foot exercising Zander apparatus are at hand, they will serve a useful purpose. In the less well-equipped office, however, or in the home where no apparatus can be utilized, fully as good results are obtained from the carefully executed and conscientiously supervised Fraenkel exercises, which are so well-known that they do not require an itemized description.

In employing exercises, whichever they be, one must not forget, in addition to precautions lest the patients fall, always to lean the body forward, as Fraenkel teaches that "we walk with our bodies and not with our feet." One should stay close to them while they are exercising, watching for the slightest symptom of exhaustion, lest they go down suddenly and with possibly sufficient force to break both kneecaps, an accident never forgotten or forgiven. Especially must one not forget to let them rest very frequently while being retaught to walk and to stand with their eyes open or shut. It is frequently surprising to what extent co-ordination can be taught, and how it can be re-developed even so as far to exceed the normal.

A great deal more can, however, be done to alleviate this distressing symptom. We have fortunately gotten beyond the stage of bathhouse-rubbing and indiscriminate applications of electricity, etc., which do more harm than good. It cannot be denied that systematic manual massage, carefully used, discriminating between the mild, soothing effleurage, etc., and the more powerful pétrissage or kneading; stimulating the muscles, nerves, glands, blood-vessels, metabolism, etc.; squeezing waste-material out of tissues, emptying the veins, forcing the circulation in the arteries, strengthening digestion, respiration, the heart, etc., will do wonders in promoting the better use of the legs and, when combined with suitable exercises (Fraenkel, von Leyden, gymnastics, stretching, etc.), will hasten the reacquisition of proper co-ordination.

An almost equally satisfactory massage can be obtained by vibratory treatment, by sinusoidalization or faradism, slowly interrupted, and in less degree by slowly interrupted galvanism, all, of course, applied to the legs and feet.

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Radiant heat and light, moreover, will assist in awakening vitality in the limbs, for, after all, light (with heat) is life, and darkness (with cold) is death, as nature plainly shows us in many ways.

3. *The Girdle or Belt Sensation.*—This well-known symptom is usually manifest at the waistline, more rarely across the nipples. It will usually be improved by using stimulating friction (manual massage), pressure, stimulating short vibration over the affected areas, abdominal massage, either by the hands, faradism (slowly interrupted, stimulating, circulation forcing and peristalsis promoting), by interrupted galvanism, or still better, by the great stimulant and contractor of involuntary muscles, slowly interrupted sinusoidal electricity, or by static or high-frequency sparks; any one of these will answer admirably, if judiciously used. Tapotement to the lower back, to stimulate the circulation in that region, can be advantageously added. Radiant heat and light for producing cutaneous hyperemia, favoring the circulation and promoting better skin elimination, is also advisable and productive of good. We are, of course, never absolutely certain of success, but I am free to state that the use of these remedies, employed as suggested, has never failed so far, even in my advanced cases, to effect the removal of this symptom. Judgment is naturally always necessary in deciding which one of these remedies, either alone or in combination, is advisable in any given case. As a rule, radiant heat and light, with either manual, vibratory, or electric massage, will answer. Overtreatment is often, like overdrugging, far worse than none, but on the other hand, insufficient treatment (either in dose or in frequency) is also inadvisable. As a rule, it is better to bring the treatments closer together than to give too much at once.

4. *The Carpet or Walking-on-Thick-Grass Sensation.*—High-frequency sparks, manual or vibratory massage, faradism, interrupted galvanism, or the sinusoidal slowly interrupted current (each stimulating the circulation, emptying the veins, waking up the nerves, and squeezing waste-products out of the muscles), with radiant heat and light (sufficient to bring the blood to the surface and warm up the feet), all applied separately or one or two in combination to the lower limbs below the knee and especially to the upper surfaces and soles of the feet, have proved very effective in my hands, especially when combined with faradic brush treatment for the anesthesia and Swedish movements for exercising the ankle-joints and augmenting local nutrition.

5. *Anesthesia.*—Whether this be present along the outer edge of the leg from the little toe to the knee, or along the arm from the little finger to the elbow, or anywhere else, this symptom is best relieved by the rapidly interrupted faradic current with the wire-brush negative pole, or by high-frequency sparks. Naturally, radiant heat and light and massage to the parts, by warming them up, bringing the blood to the surface (cutaneous hyperemia), and promoting better circulation, will greatly assist the brush. The massage can be either manual, electric, or vibratory, as long as it is of the stimulating and not of the sedative kind.

6. *The Bladder Trouble.*—This is usually manifested as incontinence. If due to atony of the bladder itself, it is best relieved by manual, vibratory, or electric massage to the lower abdomen, directly over the symphysis pubis and

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preferably applied with slight pressure and a rapid vibratory movement with the finger-tips or a disk-vibratode covered with rubber. Effleurage will also frequently sufficiently stimulate the musculature of the bladder and tone it up. The best remedy, however, is the rapidly interrupted faradic current, either applied with one pole, the negative, over the bladder and the positive over the perineum, or still better, with an urethral electrode attached to the negative pole inside of the full bladder and the positive pole on the outside of the bladder over the symphysis pubis. The full bladder, *i.e.*, the urine in it, acts as an electrode and conveys the electricity to all parts of the bladder at the same time. The entire musculature is therefore toned up, both in respect of contractions and the proper degree of tonicity.

More frequently, however, the trouble is due to weakness of the sphincter of the bladder, in which case the former current is used as before, except that it is only introduced into the urethra up to the sphincter instead of into the bladder, and then strengthens particularly the sphincter. In using it thus I prefer to place the positive pole on the perineum instead of on the lower abdomen.

It is also advisable to apply mechanical vibration to the sacral region from the 5th lumbar to the 4th sacral vertebræ, or to use Abrams's percussion over the 5th lumbar spine in order to obtain the bladder-reflex of contraction.

7. *Absence of the Quadriceps Femoris or So-called Patellar Reflex.*—Absence of the knee-jerk is a symptom only of interest to physicians, and useful from the standpoint of diagnosis and possibly prognosis. It causes the patients no inconvenience. Very rarely does it improve under any treatment. It may, however, be bettered in conjunction with a general improvement of the entire body and can temporarily be restored by concussion or sinusoidalization of the 2d lumbar spine, which evokes the quadriceps femoris reflex. The latter procedure, while interesting, does not appear to possess any therapeutic value.

8. *Diplopia, Argyll-Robertson Pupil and Optic Atrophy.*—This usually most unyielding condition of the eyes, which often, if not invariably, ultimately renders the patients blind and helpless, constitutes our worst bugbear in the treatment of this disease, and so far presents apparently unsurmountable obstacles to the medicophysiotherapist and ophthalmologist. Harris and Morton, as mentioned before, claim that the eyes share in a general improvement. W. Franklin Coleman, of Chicago, recommends 5 to 10 milliampère negative galvanism to the closed eyelids, each séance lasting ten minutes, for optic atrophy, and claims improvement in 40 per cent. of his cases.

I doubt greatly whether any treatment can or will restore atrophied nerve-tissue, especially in inaccessible positions as in the orbit, but as we never know definitely whether a nerve is really atrophied or whether its activity is simply temporarily dormant and can be reawakened, is it not our duty to try our best to do so instead of bluntly robbing these people of their last ray of hope, as is only too frequently and heartlessly done by some of our leading ophthalmologists? Personally, I feel decidedly that it is, and therefore always make an attempt when allowed to do so,—which is not always the case, as a great many

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of the patients are too nervous to permit of the proper eye treatment in this condition. A very limited experience in these cases prevents me from making definite claims. Coleman's milliampèrage seems to me too strong, and for this reason I usually begin his treatment with but ½ to 1 milliampère instead of 5 to 10; even then patients have complained to me of burning and stopped my treatment entirely. In ordinary inflammatory conditions of the eyes and in one case only of supposed atrophy in tabes I have personally had excellent results with high-frequency current cautiously applied to the eyelids. I place the glass vacuum tube tightly against the eyelids and keep it there to prevent the possibility of sparking. Next I turn on the current by placing the switch on the lowest point (the first) of the rheostat, while the spark-gap is entirely closed; I then very slowly and cautiously open the spark-gap until the patient states that he or she feels an agreeable warmth without any burning. The séance is of from five to ten minutes' duration and the current is turned off entirely before the tube is removed from the eyes. The effect is a removal of pain and inflammatory symptoms, if there be any, usually with better vision.

When using galvanism I apply the negative pole to the eyelids for absorbing and removing exudate, if there should be any, and the positive pole to the back of the neck.

I have also tried Abrams's concussion and sinusoidalization of the 10th dorsal spine with the idea of curing by improving the blood-supply to the eyes, and seemingly have obtained a slight improvement. Of course I have not given any of the eye treatments a sufficient trial to vouchsafe a reliable opinion, but I feel encouraged that something can be done for these unfortunate patients. Even if this hope should prove unwarranted, my success in improving the general condition of my tabetic patients makes me feel highly encouraged. Some pessimists would undoubtedly call my attention to the frequent remissions, etc., witnessed in tabes, but personally I have seen too many good results from physiotherapy not to feel highly optimistic.

I shall now give a brief description of the *constitutional* or *general treatment,* which is always advisable in conjunction with the above local symptomatic treatments. In every case of tabes dorsalis, whatever one may choose to do for the relief of the urgent local manifestations, it must be remembered that one is dealing with a disease of the cord and that the latter needs attention. I know of no treatment for influencing the cord and the pathological condition existing therein which could even approximately approach strong galvanism, with one pole in the cervical region and the other on the sacrum. I prefer to change the polarity repeatedly by means of the commutator and use the current at first preferably daily, then thrice weekly, later twice, and ultimately, if the patient has improved decidedly, at least once a week for months, or, if necessary, longer. Galvanism, thus used, seems to possess a soothing, absorbing, dissolving effect, and will restore the cord if anything will. I also very frequently employ, however, general massage and general radiant heat and light for their well-known constitutional, anti-inflammatory, and tonifying effects, as well as for the purpose of limbering up the stiffened articulations, etc. For others, I use general faradization or sinusoidalization if the patient is in bed and at rest,

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and general galvanization or autocondensation, or hydroelectric baths,—either one with manual massage,—if he is about.

The neuromuscular mechanism, according to Snow, is acted upon locally by d'Arsonval currents; thus the current in autocondensation surges through our patients, lowers their arterial tension, acts on metabolism, causes better excretion and tissue-combustion, assists the kidneys, etc. Therefore general faradization, sinusoidalization, general massage, and d'Arsonval autocondensation can almost always be used for their general excreting, nutritive and tonic effects.

Finally, while I wish to go on record as advocating a trial of scientific physiotherapy in tabes dorsalis and every other so-called incurable disease, I would strongly protest against the deplorable habit of otherwise conscientious practitioners of attempting to use these modalities without possessing the proper theoretical and practical knowledge. Apparatus manufacturers can give you instructions in using their apparatus, but they are with very few exceptions neither physicians nor electrotherapeutists, and know nothing about the dangers, contraindications, and the proper technique in certain conditions. The physician who, knowing the great attendant dangers, attempts to use these modalities for his patients, is a worse quack than the advertising fakir, who probably does not know that the modalities are capable of doing as much, if not more, harm than good. Again remember Abrams's motto: *Qui bene diagnoscit, bene curat!* (He who diagnoses well, treats well.)

DISCUSSION.

Dr. J. Madison Taylor mentioned that while he had had no practical experience with electricity, he had always thought that there seemed no physiological reason for such treatments and that it was not exactly known what they achieved and how. He felt greatly interested, however, in the reports, and highly in favor of constant progress and up-to-date treatment, but would limit himself at this time to discussing some additional treatments not at all or insufficiently mentioned. He then referred to his extensive experience in the treatment of tabes by thyroid, the action of which seemed favorable, though why he could not tell. He had also had excellent results from suspension with a very simple apparatus described by him, as well as from exercises,—those of Fraenkel, von Leyden and some of his own. Dr. Taylor also spoke of a treatment by a certain female quack in Philadelphia, who appeared to be quite successful in ameliorating tabetic symptoms by washing the patients with a solution supposed to contain principally ammonium chloride, and subsequently sandpapering them.

Dr. Samuel Axilbund gave a complete etiological and pathological account of the preataxic and ataxic stages of a large number of cases of tabes treated at the Samaritan Hospital, presenting the statistics collected at that hospital and abroad. His preataxic cases had especially been benefited by salvarsan. He also seemed to believe that the great majority of tabes cases are of syphilitic origin.

Dr. Max J. Walter gave an account of his experience with tabes cases especially as regards exercise treatments. He dwelt in particular on the difficulty of tracing a history of syphilis in a great many cases and upon the fact that remissions and occasionally spontaneous cures took place, especially in cases where the patients had exercised their spinal columns, loosening the intervertebral joints, muscles, ligaments, etc., by extension and exercises in a gymnasium. The speaker also recommended the proper use of massage and electricity.

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Dr. Henry Beates, Jr., strongly advocated study of the newer methods of treatments, referred to the ignorance and ill-considered opposition of many of our profession to what is new and progressive and, in particular, agreed with Drs. Taylor and von Cotzhausen in advising unremitting effort to bring the newer therapies to a standard and scientific basis, so as to compel consideration and respect.

Dr. von Cotzhausen, in summing up, stated that he thought possibly quite a number of Dr. Axilbund's cured preataxic cases might have been cases of multiple neuritis; that Dr. Taylor's success with thyroid treatment might have been due to the iodine in the thyroid acting on the syphilitic cause of the tabes; that the apparent temporary improvement after sandpapering of the quack's cases had probably been due to the friction and irritation causing an intense skin hyperemia, or, in other words, bleeding the patients into their skin; that the remarks made by one member disapproving of rubbing and electricity, which he had always found useless, inasmuch as the trouble existed in the brain and not in the part treated, did not seem to him warranted; that the therapeutic procedures under discussion had definite physiological indications and were not chosen at random, but simply and alone because they met the indications presenting; that electrotherapeusis was now almost an exact science, and that each and every one of the various forms of apparatus and methods of applying electricity at hand had its indications, contraindications, dangers, don'ts, etc.

Cyclopedia of Current Literature

ACTINOMYCOSIS, X-RAY TREATMENT IN.

Good results are reported by the author from the employment of the X-rays in cases of actinomycosis resisting the customary iodide treatment and recurring after operative intervention. In the first case thus treated, a man 41 years of age, already operated twice and in whom extension of the disease process to the tongue and superior maxilla had prevented the performance of a sufficiently radical excision of tissue, the abundant flow of secretions from the open surface, necessitating three or four dressings daily, ceased after the first application of the X-rays, and the sinus closed in a few days. Since this patient had also received large doses of potassium iodide, conclusive proof of the efficacy of the rays was not obtained until a second case presented itself. This patient had already been subjected to several operations, the last, performed a year before, having consisted in extensive ablation of the right cheek with part of the upper maxilla. Under the X-rays, employed as in the treatment of a tuberculous swelling, the infiltration underwent reabsorption and the sinus closed. The cure has been maintained for six months in both cases. R. Lævy (Zentralblatt für Chirurgie, January 25, 1913).

APPENDICULAR SCIATICA.

Reference is made by the authors to several patients who came to them complaining of obstinate and long-standing sciatica, without abdominal disturbance, in whom eventually appendicular trouble was found to have been the cause of the pain. As the latter was referred in unusual directions, was increased by the assumption of the recumbent posture, and a very slight degree of tenderness could be elicited in the right iliac fossa, together with rigidity, an X-ray examination was made. The seat of discomfort was found to be located at the lower

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extremity of the cecum. The latter, moreover, failed to rise when examined with the X-rays while the patient was in the Trendelenburg position. The authors therefore had 3 patients with particularly sharp pains in the lower limbs operated. In all adhesions were found uniting firmly the ceco-appendicular structures, themselves situated low down, with the posterior parietes. After appendectomy and liberation of the adhesions the patients were cured of their sciatica. From these cases the authors are led to advise X-ray examination of the ceco-appendicular region in cases of sciatica presenting the peculiarities above described, followed by operation if indicated. Enriquez and Gutmann (Société médicale des Hôpitaux de Paris; Bulletin médical, June 28, 1913).

CARCINOMA OF THE PROSTATE.

Until recently, the author points out, prostatic carcinoma was considered a very rare disease. Probably the first intimation of its frequency was given by Albarran and Hallé, who found carcinoma 14 times in 100 prostates that had been removed presumably for benign hypertrophy of the gland. The latest data give reason to believe that carcinoma of the prostate occurs in from 15 to 20 per cent. of all cases of prostate enlargement. It may be associated with benign hypertrophy or independent of it. It may first appear as a small nodule in an otherwise normal gland, or in one that is already hypertrophied; in the latter event, the malignant growth is found in the non-hypertrophied portion of the gland, generally in the posterior portion, behind the benign, hypertrophied lateral lobes. The symptoms at first are those of benign hypertrophy, followed by pain and often hematuria. The pain is dull, constant and radiating, and may simulate other conditions. The growth remains for a variable period within the prostatic capsule, differing in slight degree from the benign hypertrophy. When it passes beyond the capsule, it frequently assumes a vicious malignancy which rapidly terminates fatally. Bony metastases are not infrequent, and should be regarded as diagnostic of carcinoma. A nodule in one or both lobes of the prostate in a man of 50 or thereabouts should be viewed as probably malignant, especially if associated with pain or occasional hematuria, and difficulty and frequency of micturition; this is particularly true if the cystoscope shows nodular ulcerations and little or no intravesical outgrowth. On the exploratory exposure of such a suspected prostate, a frozen section should be made and immediately examined, and if it is found carcinomatous, the radical operation suggested by Young should be done. This consists in removing the prostate, seminal vesicles, vasa deferentia and the anterior portion of the trigone of the bladder. Catheter life, with palliative medication—opiates, sedatives, antiseptics, etc.—must be resorted to in inoperable cases. A. L. Wolbarst (International Journal of Surgery, May, 1913).

DIARRHEA, INFANTILE, TREATMENT OF.

A report of the results given by various forms of treatment in a series of 444 cases of infantile diarrhea in Cairo, Egypt, is made by the author. He sought to determine, in particular, the value of subcutaneous saline injections as a routine treatment, as well as to ascertain whether the "marine plasma" of Quinton possesses any special properties lacking in other saline solutions. The conclusions reached were that (1) Saline injections alone, without drugs, are capa-

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ble of curing most cases of infantile diarrhea. (2) Quinton's marine plasma has no definite superiority over artificial saline of the same strength. Such hypertonic solutions are preferable to weaker ones (0.75 per cent. or less). (3) Medicines are preferable to saline injections as a routine treatment of infantile diarrhea. (4) Disregard of dietary instructions is the commonest cause of failure of out-patient treatment. (5) Injections are valuable in proportion as the loss of fluid—by vomiting and diarrhea—exceeds the intake. They should be given before actual symptoms of collapse arise.

The medicinal treatment employed by the author was as follows: When vomiting was at all a prominent symptom, dilute iodine solution was prescribed consisting of 3 minims (0.2 c.c.) of the tincture in 1 ounce (30 c.c.) of water. Of this a small teaspoonful was given every two hours, before each feeding. This was so successful that it was often given to cases on saline injection treatment in which vomiting had persisted. The most useful drug was found to be calomel, 1/6 grain (0.01 Gm.), combined with bismuth subcarbonate, 2½ grains (0.15 Gm.), which gave better results than mercury with chalk. In addition to the powders, a little carminative mixture was given, with the addition of rum if there were signs of collapse. When mucus and blood in the stools showed the large intestine to be chiefly involved, salines (sodium sulphate or phosphate) were prescribed with success. The addition of a little tincture of opium in bad cases was beneficial. Of 58 cases treated with these medicines only, 55, or 95.1 per cent., recovered.

The Ringer solution administered as artificial saline by the author contained: Sodium chloride, 0.9 per cent.; potassium chloride and calcium chloride, of each 0.02 per cent., and sodium bicarbonate, 0.01 per cent. The injections were given from a small glass reservoir fixed about 3 feet (1 meter) above the patient, through rubber tubing and a platino-iridium needle, the whole being sterilized before use. The skin at the site of injection—usually the side of the abdomen—was sterilized with tincture of iodine only, and the puncture afterward sealed by collodion. The dose varied from 25 to 150 c.c. (6 drams to 5 ounces), according to circumstances, the average being 60 c.c. (2 ounces). Where injection of 30 c.c. (1 ounce) caused much swelling, no more was given; whereas if it was quickly absorbed more was run in. When, however, there were signs of failing circulation, large doses were given two or three times a day. Immediate cessation of vomiting after a single injection was rarely seen, but improvement was generally manifest after the first day; unless the injections were continued a relapse usually occurred. The injection was followed by a temporary rise of temperature, due to bacterial products, which it is practically impossible to exclude; this contraindicates the injections for cases with already very high fever. Of 62 cases treated with the artificial Ringer only, 51, or 85 per cent., recovered—a less proportion than among those treated medicinally alone.

The conclusion is thus reached that for the average case, medicinal treatment is to be preferred. The indications for saline injections—which should supplement and not supersede the medicinal treatment—are: (1) persistent vomiting of food or of medicine; (2) falling temperature with aggravation of other signs; (3) exhaustion shown by sinking of the eyes and loss of elasticity of the

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skin. In many cases which had not improved on medicinal treatment, saline injections yielded a fair measure of success. When collapse symptoms were evident, injections were most valuable, and in several instances saved life. H. B. Day (Practitioner, July, 1913).

DYSCHEZIA AND TORPOR RECTI.

Dyschezia is the term used by Hertz to define the state in which it is impossible to empty the rectum completely. Some part of the stool always remains, and thus the feces accumulate gradually until large masses fill the ampulla. Torpor recti, on the other hand, is reserved by the author of the present paper solely for rectal disturbances resulting from a defective course of evacuation caused by want of stimulus to defecation, *i.e.*, a form of constipation in which, while the rectum is full to overflowing, no need of defecation is experienced by the patient. The diagnosis of this torpor recti is fairly simple. A description or observation of the stool and digital or endoscopic examination usually suffice. Important is the fact that diet or purgatives are as a rule of no value.

In the treatment, the author has for many years used very small enemas,—but not with glycerin, on account of the intense irritation caused by it. Water, chamomile tea, warm olive oil, oleum hyoscyami and liquid paraffin, applied morning and evening, are to be highly recommended. The paraffin, spreading over the surface of the bowel membranes, softens the dry feces attached to it and prevents excessive dryness of the contents. For children a cacao butter suppository is often sufficient.

In addition to dilating tubes and bougies, which the author uses in some forms of spasmodic constipation, he recommends in particular the *lavement électrique*. A tubular electrode, furnished with a metal mandrel, is introduced into the rectum. Two hundred grams (6 ounces) of water are poured into it, and it can be charged from either electrical pole, according to the effect desired. The other electrode, broad and flat, is applied alternately to the flexure of the colon and the cecum. The application lasts ten minutes. With this method the author has obtained good and lasting results in the most obstinate cases. Gustav Singer (New York Medical Journal, July 5, 1913).

EDEMA, LOCAL TREATMENT OF.

Referring to mechanical methods of treating edema locally, the author states that in light forms massage may give good results; it transforms hard edematous infiltrations into softer ones and relieves the unpleasant sensation of tension often experienced by these patients, especially in the legs. Massage should on no account be practised, however, where the tissues are inflamed. Especially in certain cases of varicose veins, moreover, must edematous skin be carefully dealt with. With the patient recumbent, massage should be practised from the legs upward to the abdomen, exerting only light pressure—especially over the abdominal wall—and no sitting should last longer than fifteen minutes. Movements of the limbs may be prescribed for brief periods several times daily. If the patient is up and about in the daytime and can stay recumbent at night, the massage should preferably be done in the evening, in order that its effects may continue when the recumbent position is taken. In mild cases general betterment will often be obtained by this means, and sometimes even an apparently spontaneous diuresis be induced.

In more pronounced circulatory weak-

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ness, local massage will prove insufficient. Sometimes better results are obtained by working at a distance, *i.e.*, on the arms and abdomen, than directly upon the edematous lower limbs. Another expedient recommended by the author is to wrap around the lower extremities, from below upward, an elastic air-chamber in the form of a rubber inner tube from a bicycle or automobile. In the application of this the turns should be imbricated, as in the case of a reversed spiral bandage. Upon pumping air into the tube the pressure spreads from below upward, owing to the reverse arrangement, the device consequently acting as a "peripheral heart," favoring progression of the blood, and causing noticeable improvement in some cases of edema.

Another procedure consists in applying over the edematous parts a dressing wet with a concentrated solution of sodium chloride, which leads to an outflow of fluid through the skin by osmosis. Comparison of the limbs of a patient, of which only one had been thus dressed over night showed a difference of several centimeters in favor of the treated limbs. Hygroscopic substances such as glycerin will produce the same effect. Practically, a mixed salt and glycerin dressing is best.

While the method just referred to is efficient only in mild cases of edema, it presents no disadvantages such as do the other methods used in severe cases, viz., drainage through stab wounds made into the tissues, incisions, Southey's tubes, Müller's curved cannulas, Fürbringer's rubber drains, etc., all of which entail the risk of excessively prolonged oozing and of local infection. The latter measures should be reserved, therefore, for the more urgent cases, and in carrying them out thorough asepsis with the aid of tincture of iodine and dressings around the drainage tube should be ensured. Paul Carnot (Paris médical, June 14, 1913).

ENDOCARDITIS, INFECTIOUS.

The type of infectious endocarditis referred to by the author is that form which begins insidiously from no known source of infection, or one that is slight. These cases run a very acute course, and death is a matter of weeks or even days in some instances. A low-grade infection of the tonsils, pyorrhea, or other conditions of the teeth, are undoubtedly responsible as portals of entry or sources of micro-organisms. In arriving at a diagnosis, one of the things that is characteristic is the presence of an unexplained daily rise in temperature, associated with increasing secondary anemia. It is the rule that there should be some leucocytosis, but it may be absent entirely.

The absolute diagnosis, however, rests upon the examination of the blood by cultural methods. In almost all the cases the infection is engrafted on a previously crippled valve.

The micro-organism responsible for this form of infection was first described by Schottmüller, who named it *Streptococcus viridens*. When grown on blood agar, this micro-organism occupies a position between the virulent streptococcus pyogenes and the pneumococcus. It has practically no virulence. Upon injecting into a rabbit a large dose—the growth from 150 or more cubic centimeters of broth—intravenously, one finds that in fifteen minutes a large part of these micro-organisms are already inside of the leucocytes; in the course of an hour all of them are taken up.

But the author has been able to show that the heart valve is a place that is peculiarly favorable for the development

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of this micro-organism. The mode of origin of endocarditis due to this organism is as follows. Owing to the clump formation, there occurs embolism, followed by a hemorrhage, in the fine capillaries of the heart valve, where, on account of the lack of collateral circulation, the organisms are protected sufficiently to multiply and produce large clumps (so large that they may be seen with the unaided eye after forty-eight hours), before leucocytes have entered. There is precipitated the whitish, fibrinous material, and the vegetation grows large. This organism is very commonly present in the mouth. It is by far the most constant micro-organism in low-grade infections about the teeth, alveolar abscesses, pyorrhea alveolaris, low-grade tonsillitis, or even on normal tonsils and mucous membranes in general. It is also commonly present in the intestinal tract.

In order to show the affinity this organism has for the endocardium, the author has injected mass cultures from normal tonsils, and those obtained during convalescence from an attack of tonsillitis, and has produced valvular hemorrhages and endocarditis. *Streptococcus viridens,* however, rarely produces arthritis. That this coccus can also cause *simple* endocarditis is certain, as the author has produced it in 7 animals. It is a probable frequent cause of simple endocarditis in man. The healthy, previously uninjured, young valve, when it becomes infected, offers greater resistance to the growth of the vegetation than the previously infected and scarred valve. Hence the simple endocarditis.

On injecting into an animal a streptococcus which resembled culturally and morphologically the *Streptococcus viridens* very closely, and was obtained from a case of acute articular rheumatism, the author was able to produce multiple arthritis, endocarditis, pericarditis and myocarditis in the same animal.

Other interesting conclusions reached by the author are as follows:—

1. The exacerbation, shower of emboli, etc., which occur in endocarditis are not merely accidents, as is commonly supposed, but are preceded for a number of days by a lack of destroying power of the patient's blood, and a consequent increase in the number of micro-organisms.

2. Intoxication occurs when the bacteria in the circulation are actively destroyed, and is roughly in proportion to the number destroyed.

3. Small doses of the homologous, dead organisms activate the patient's blood, while large doses have the opposite effect.

4. Temporary increase in fever following administration of small doses of vaccine in these cases is not due to the injected dead bacteria, but to intravascular destruction of the infecting organisms.

5. The intravenous injection of normal human serum activates the patient's blood. Intoxication is marked if the number of bacteria in the circulation happens to be high, and is absent when they are low. This fact would tend to show why transfusion of blood at certain times in these cases is dangerous. E. W. Rosenow (Lancet-Clinic, April 12, 1913).

EPIDEMIC MENINGITIS IN YOUNG CHILDREN.

Whereas in children between the ages of 2 and 10 years this affection, the author points out, has been deprived of its many terrifying aspects through ready diagnosis and serum treatment, such is not the case with children and infants below 2 years of age, who often present misleading symptoms, preventing an early diagnosis in a number of cases. Particularly difficult are the cases

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complicated with a pneumonia. Many cases of pneumonia, in fact, many diseases of infancy, even a simple intestinal disorder, are complicated with cerebral symptoms. Again, there are in young infants cases in which the initial symptoms of fever and restlessness are not combined with any other symptoms, such as rigidity; or there may be a slight concomitant otitis to mislead. The physician is alive to the presence of a Kernig, but this is certainly absent in many infants and is of little value in the diagnosis of a meningitis.

A day's delay in diagnosis in older children is not dangerous, but the same delay in a baby may mean its loss. The stress of diagnosis must be placed on the persistence of cerebral symptoms, high fever and, what is of greatest import and scarcely appreciated at its full value, Macewen's percussion note over the frontoparietal juncture as a sign of increasing fluid in the head. The younger the child the greater the difficulty in coming to a definite conclusion as to increase of fluid in the ventricles, for in rachitic infants a Macewen percussion note is normal; but some practice will teach the difference in the line between the normal and abnormal. A tense fontanelle is of some value, but not always, for some children will mislead the most expert when a crying spell is present.

In the treatment, the earlier the injections of Flexner serum the more certain the therapeutic effects of the latter. Virulence of the infection and closure of the subarachnoid space from the spinal canal, rendering simple lumbar puncture fruitless, are factors in the high mortality. Eight patients in the latter condition, treated by direct ventricular puncture, with introduction of serum, did not show a favorable effect. There is also a set of cases which cannot be reached by the serum because the variation in cerebral pressure occasioned in its introduction is too rapid for the delicately constructed nervous system, death occurring at once. The author therefore urges that in infants below 2 years of age in whom meningitis is suspected an early lumbar puncture be made so that the treatment may be begun as soon as feasible. In these young patients fluids should be withdrawn slowly and with the greatest caution, and serum likewise introduced very slowly.

In young patients the temperature is a guide of great value as to the necessity of repeated puncture and introduction of serum, as in older children, but in the face of great restlessness and a normal temperature fluid should be withdrawn by lumbar puncture and examined for bacteria. If these persist and a cloudy fluid is obtained, it is safe to reintroduce serum rather than delay and wait for actual cultures to determine whether or not such fluid is sterile.

Very baffling are the cases in infants in whom, after repeated injection of serum and the temperature having dropped to the normal and stayed there for weeks, a progressive hydrocephalus develops. This occurs even when the fluid withdrawn is shown after a time to be sterile. This hydrocephalus is not only due to changes in the ependyma of the ventricles, but to a persistence of the meningococci in the ventricles in much diminished numbers and reduced virulence. Caution is thus necessary in pronouncing these patients cured. Henry Koplik (Journal of the American Medical Association, June 7, 1913).

EPINEPHRIN, ANTIARTHRALGIC AND ANTINEURALGIC ACTION OF.

Favorable effects are reported by the author from the administration of epine-

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phrin in the majority of a series of 15 cases of arthritis, of various forms. In 14 of these patients the condition was acute. Four cases of ordinary polyarthritis ran their course without any complication. In 2, however, slight conjunctival icterus appeared from the outset, the urinary urobilin increased considerably, and a fibrinous pericarditis followed. In 2 others a pleural effusion developed. In 2 cases which failed to respond to the treatment sepsis appeared to have been the cause. In a case of arthritis deformans the drug was also without effect.

Nerve inflammations seemed to be favorably influenced by epinephrin. In 2 patients suffering from sciatica, aged respectively 53 and 63 years, marked improvement occurred after a few injections, especially in one case.

The joint cases treated were of widely varying ages. No untoward effect was observed. The epinephrin was injected subcutaneously every day in the dose of 1 c.c. (16 minims) of the 1:1000 solution, for a period of one to two weeks. The injections were generally made at the seat of pain. F. Gaisböck (Medizinische Klinik, March 16, 1913).

ERYSIPELAS, TREATMENT OF.

For many years the author has used, in the treatment of erysipelas, a remedy which he considers to exert a rapid abortive action on the disease, viz., buttermilk, which he orders to be applied on soft rags, the latter to be kept constantly wet with it. In the first case in which it was used the pain was immediately relieved and quickly removed altogether. The temperature remaining high, however, it was suggested that, in addition to the local application, buttermilk should be taken by mouth. Upon trying this, the temperature was observed to drop almost at once from 104° F. to 99°. The inflammation very rapidly subsided, and the patient was practically well the next day. In the numerous subsequent cases in which free local application of buttermilk was employed, uniformly favorable results were secured, the spread of the inflammation being rapidly checked, whatever the stage of the erysipelas, the pain disappearing, and the whole morbid process rapidly aborting. The author is unable to state whether this undoubted abortive power is due to the presence of beneficent microorganisms in the buttermilk, to the antiseptic action of its lactic acid, or perhaps to both these factors together. F. S. Arnold (Practitioner, May, 1913).

FISTULA, TREATMENT OF RECTAL.

Injection of a 1 per cent. aqueous solution of formaldehyde is recommended by the writer. One should tell the patient that this will cause extreme pain for from three to five minutes, followed by local anesthesia. Care should be taken to see that the external opening of the fistula allows free drainage; this will be necessary for a few days only. In case of a complete fistula pressure should be made with a finger on the intestinal opening during the injection, as the entrance of the solution in the intestinal tract would cause unnecessary irritation. If the solution is colored with an aniline dye, the intestinal opening will readily be found.

This method proved satisfactory in the writer's hands in all varieties of fistula, single or multiple and complete or incomplete, as well as in one case of perirectal and multiple fistula resulting from an infective process in the seminal vesicles. In the last-mentioned case 3 treatments, at one week intervals, were

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necessary. C. G. Roehr (New York Medical Journal, July 19, 1913).

GASTRIC AFFECTIONS, USE OF SODIUM BICARBONATE IN.

The patients to whom the author administers sodium bicarbonate are those suffering from abnormally slow evacuation of the stomach, whether due to diminished motility or to pyloric spasm. Gastric pain in itself seems to be a sign of abnormal evacuation. Sodium bicarbonate is thus indicated in a great many cases. It may be freely used except when there is acute ulceration (hematemesis or melena) and in some cases of gastric cancer. It must be considered not so much as giving an immediate and temporary result, as acting as a regulator of gastric digestion. Therefore it should be used to prevent pain rather than to arrest it, and it seems rational to prescribe it in small doses, repeated during the course of the same digestive period. The following combination is recommended by the author:—

℞ Sodii bicarbonatis, gr. xij (0.75 Gm.).
Magnesii ponderosi, gr. iv (0.25 Gm.).
Pulveris belladonnæ foliorum, gr. ⅙ (0.01 Gm.).—M.

Patients suffering from dyspeptic pains in association with motor insufficiency should take 2 of the above powders an hour and a half hour before, and again a half hour and an hour after, each meal. Patients in whom delayed evacuation is due to pyloric spasm produced or kept up by hypersecretion should take the powders during the whole of the digestive process, beginning an hour after meals and continuing at intervals of an hour and a half until the next meal.

Bourget's mixture, which is as follows, may be prescribed instead of the foregoing:—

℞ Sodii bicarbonatis, ʒij (8 Gm.).
Sodii phosphatis,
Sodii sulphatis, āā ʒss (2 Gm.).
Aquæ, ℥iij (100 Gm).

M. Sig.: One to 1½ tablespoonfuls to be taken in the morning as soon as the pain appears.

It may be advisable to heat the solution of sodium bicarbonate to about 100° F., since it is well known that fluids the temperature of which is close to body heat are less irritating to mucous membranes.

In spite of the advantages of the alkaline treatment with sodium bicarbonate, it cannot be expected alone to work wonders. Proper dietetic treatment must be simultaneously instituted. The dose should not be reduced as soon as the pains become less severe or frequent. The treatment should be started at the same time that dietetic measures are begun, but must not be continued after the latter has been stopped. A. Binet (Progrès médical; Virginia Medical Semi-Monthly, April 25, 1913).

GASTRIC DILATATION, TREATMENT OF.

A dilated stomach, the author asserts, retains its contractility wonderfully well no matter for how long a time or to what degree it has been dilated. The chief purpose in the treatment should be to give the dilated stomach every possible opportunity to contract. This purpose is best accomplished by the removal of gastric contents, starvation, and rest in bed. These three therapeutic measures should be considered a distinct method of treating gastric dilatation, indicated as soon as the diagnosis has been made, just as the starvation cure is considered a method of treating gastric ulcer.

The method is indicated as a preparatory treatment in those cases of gastric dilatation in which a gastroen-

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terostomy is to be made on account of the cause which has led to dilatation, as under such treatment the stomach will contract as far as possible, and an eventual continuous gastric secretion will cease.

Intragastric or extragastric electricity, massage, cold compresses or other hydrotherapeutic measures, abdominal supporters, rectal feeding, strychnine, antiseptic drugs and alkalies are valuable auxiliary but not strictly necessary measures. A. Frick (Journal of the American Medical Association, June 14, 1913).

GONORRHEA, NEW TREATMENT FOR ACUTE.

The author asserts, from observations in a limited number of cases, that acute gonorrhea can be cured in a week or ten days by the use of intraurethral injections of iodine in a blend of oils. In the first 2 cases the iodine was used in 5 per cent. strength, but one of the patients complained of rather severe smarting, and in the subsequent cases the iodine was combined with another oil-soluble antiseptic (not specified), which enabled him to use a weaker strength of iodine with practically the same effect, but less discomfort to the patient. The result of this treatment in 6 cases was even slightly better than in the first 2, in which, according to the author's description, the discharge ceased in a couple of days. He had found that something more besides the iodine, *e.g.*, zinc phenolsulphonate, was required to bring about a definite cure, and availed himself of this knowledge in treating the 6 cases referred to. The iodine injections were given once daily and the zinc phenolsulphonate injections evidently twice a day. The strength of the zinc solution should not be greater than will just produce a fairly perceptible sting.

In each of the 8 cases treated the diagnosis had been verified microscopically. The author believes the treatment also applicable to streptococcus and staphylococcus infections of the urethra. The best results can be obtained if the physician himself makes the iodine injections, leaving the zinc phenolsulphonate or other injections to be made by the patient.

In chronic cases one cannot expect the same results, though after skillful massage of the ducts, prostate, vesicles, etc., about the end of the third week, followed by micturition, an injection of iodine may reasonably be expected to do some good. With an effective treatment of the acute stage such as the author advocates, however, there should follow a diminution of the chronic cases. O. L. Mulot (Medical Record, April 19, 1913).

LARYNGECTOMY, TECHNIQUE OF.

Both laryngectomy at one sitting and laryngectomy in two sittings according to the technique of Glück, in which the trachea is first cut below the neoplasm and sutured to the skin, and the larynx excised later, have been abandoned by the author, owing to the difficulty frequently met with in establishing permanent union of the tracheal cut end with the skin, loosening and descent of the trachea occurring, the wound becoming infected, and the patient succumbing to bronchopneumonia. In order to avoid this complication the author has adopted the plan of not cutting the trachea completely across, but favoring retention of its normal position by severing only the anterior portion of the canal and allowing its normal adhesions with the esophagus to remain.

At the first sitting, under local anesthesia whenever practicable, a rather low

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transverse incision is made over the trachea. Preferably a small inferior flap should be made. The trachea is then incised transversely between two of its rings, a portion of the upper of these rings removed, and the skin sutured to the edges of the (incomplete) tracheal opening. Slight temperature elevation occurs for a few days, but this soon subsides, and some time after the laryngectomy is performed, usually under general anesthesia, induced through the trachea. With the aid of Trendelenburg's apparatus, an incision of the shape of a reclining H is made, one horizontal cut being at the lower border of the hyoid, the other one centimeter above the tracheotomy opening, and both incisions extending from one sternomastoid muscle to the other. The vertical incision is made slightly to one side of the midline. The larynx is then freed on its lateral aspects and detachment of its posterior surface begun. The pharynx is now opened below the hyoid bone, the laryngeal orifice drawn forward, the pharynx detached from the larynx beginning at the retro-arytenoid region, then lower by means of the trachea, which is cut at the level of the artificial opening. The pharynx is then closed, the two skin flaps brought into place, and the larger one sutured at its lower margin to the posterior part of the trachea. The skin is adjusted and suitable drainage instituted. In 2 successive cases of laryngeal carcinoma in which this technique was followed by the author, complete success was met with. Durand (Lyon médical, June 8, 1913).

MALNUTRITION AND ATROPHY OF INFANTS, TREATMENT OF.

Atrophy in infants must be looked on as a condition in which foods containing even normal quantities of sugar and fat are not well absorbed, and likely to produce intolerance. As rational treatment the use of a food poor in these particular elements suggests itself. In the writer's opinion no food fulfills the conditions so well as albumin milk, or albumin buttermilk. Used in daily quantities of 1 to 3 ounces to each pound of the infant's weight, these foods will frequently tide babies over the danger of collapse and restore tolerance for other foods. Small amounts should be fed at first and gradually increased, especially if vomiting is present. Unless the baby is less than a month old, the interval between feedings should be at least three hours. It is well to start with 1 ounce to every pound of body weight in the twenty-four hours, increasing gradually to 2 or 3 ounces. Then one should add sugar—preferably a malt sugar—about ¼ ounce at a time to the daily amount, until 1 or 1½ ounces are being given. But until the infant has begun to gain steadily it is unsafe to give the larger quantity. The expensive imported malt preparation used by Finkelstein may be replaced by a domestic preparation of dextri-maltose which is perfectly satisfactory. The important point is not to force the feeding too early. Often the weight will remain stationary for weeks. But once the child begins to gain, the tolerance for food increases until 60 or 70 calories to the pound of weight are required as compared with 35 or 40 for the normal infant. Buttermilk contains from 10 to 12 calories, albumin milk about 13, and whole milk about 21, to each ounce. Dextri-maltose contains about 110 calories in each ounce. It is an easy matter to estimate the caloric value of the twenty-four hour quantity.

As early as possible, but not too early, these soured milk foods should be replaced by mixtures of skimmed milk and later whole milk. Cream mixtures are

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usually not well borne at this time. The daily weight record should be scrutinized, and if a rapid loss of weight occurs after an increase of food, or in an intercurrent infection, as middle-ear disease—a common complication—it will be necessary to start all over again and build up the food tolerance. Months of patient work are often necessary to bring these infants to a normal metabolic standard. Atony of the intestine accompanies the atrophic condition, and when the quantity of milk is increased, as when milk mixtures are given, the increased food residue finds the intestine unable to cope with it, constipation resulting. An increase in malt extract, or the use of suppositories, will correct this. In severe cases collapse may complicate matters; this is especially to be feared in very hot weather or during parenteral infections, either with or without overfeeding. Rapid loss of weight, sunken fontanelles, weak pulse and a very low temperature, with pinched, ashen features are danger signals. Whisky, strychnine hypodermically, salt solution and external heat are all useful in this complication.

Extremes of either heat or cold are to be avoided in connection with atrophic babies, as the latter are less able to withstand variations of temperature than other children. A gain in weight under the treatment advised is not to be looked for in the beginning, for food tolerance must first be restored. Hunger is a symptom of atrophy, and bears no relation to the amount of food given. Since many ounces may be lost in twenty-four hours, the daily weight record is essential. Albumin milk and buttermilk are useful to prepare the way for other foods, but they are only emergency foods and must not be continued too long. The best food for an atrophic baby, after all, is breast milk, for it is well tolerated when all artificial expedients fail. John Foote (Interstate Medical Journal, June, 1913).

MAMMARY GLANDS, INTERNAL SECRETION OF.

The physiological rôle of the mammary internal secretion, the authors point out, is still in many respects obscure. Especially is this true in regard to their relation to the uterus. While Scherbak observed a decrease in size of this organ after removal of the mammæ, Fedorov noted, on the contrary, that injections of mammary extracts into animals produced this same result. The experiments of the authors consisted, first of all, in administering subcutaneous injections of mammary extract to 4 pregnant animals. This was found to bring on abortion. Similar injections into non-pregnant animals, on the other hand, constantly induced an atrophy of the uterus and ovaries which was so marked that the authors had never observed the like before. Reliable control experiments were made. In young growing animals, the results were still more striking. Thus, the reproductive apparatus of a female animal treated with the extract for four weeks was found but one-third as large as that of the control. Microscopic examination revealed atrophy of the uterine glands. The adrenal bodies, on the other hand, were of increased volume. An analogous arrest of the development of the testicles was observed in a male animal. After twenty-nine days of mammary medication the testicles were but one-third the normal size. Spermatogenesis was inhibited. The adrenals, as in the female animals, were enlarged. Schiffmann and Vystavel (Wiener klinische Wochenschrift, February 13, 1913).

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MUSCULAR RHEUMATISM, TREATMENT OF.

The chief measure, other than rest in bed, in the treatment of muscular rheumatism is the application of heat in the form of fomentations, poultices, and hot-water bags. Dry cupping over the region of tenderness one-half hour twice or thrice daily is very beneficial. If there is electricity in the patient's home, one or two electric light bulbs placed six inches from the affected part, a piece of asbestos, tin or woolen material encircling, so as to concentrate the heat, will produce a useful hyperemia; the skin should be protected by anointing with petrolatum. The electric light baking apparatus is, however, more serviceable. This treatment the author has found very beneficial, together with light massage, after which a woolen cloth is placed over the hyperemic area. He has also found serviceable light massage with the use of an analgesic lubricant:—

℞ Mentholis,
Camphoræ, āā 3j-ij (4 to 8 Gm.).
Chlorali hydrati, 3ss-j (2 to 4 Gm.).
Olei gaultheriæ, 3ij-iv (8 to 15 Gm.).
Adipis lanæ hydrosi, ℥j-ij (30 to 60 Gm.).
M. et ft. unguentum.

After the patient is able to be out of bed a suitable adhesive plaster dressing will allow him to walk, with slight muscular fixation. J. H. Shaw.

Another writer describes the treatment essentially as follows: 1. Rest in bed will greatly shorten the duration of the affection. 2. The diet should be liberal and consist of milk, eggs, light meats, farinaceous articles and cruciferous vegetables. Between the regular meals buttermilk may be allowed *ad libitum*. Water should be freely drunk. 3. The general bath should be given daily, with temperature increased according to the patient's condition. Its duration should be from five to twenty minutes, after which the author gives either a blanket or alcohol sweat. During this treatment the patient should be given all the hot liquids that he can comfortably bear. 4. Massage should not be instituted until after the pain and tenderness have been under control at least twenty-four hours. It should be general, but with special attention to the area involved. 5. In some cases of lumbago and other localized muscular troubles in which results are not good with the general methods at hand, the author has used acupuncture with advantage. Of use also has been the injection of 10 c.c. of ice-cold normal salt solution directly into the involved muscle. 6. Where necessary in the presence of severe pain, the author gives one or two injections of morphine. Among curative drugs, the salicylates stand out pre-eminently. They may be given in large hourly doses, with sodium bicarbonate, until symptoms of intoxication appear, when reliance should be placed on smaller doses. Where gastric disturbance is such as to preclude their use, hypodermic injection of sodium salicylate or of salicylic acid in oil may be tried. Fifteen-grain suppositories of sodium salicylate, given four or five times daily, might also be used. In chronic cases a friable pill of iron carbonate, extract of nux vomica, and arsenic may be ordered after meals. Constipation is to be combated. Locally, a 20 per cent. salicylic acid ointment or a liniment of oil of gaultheria may be used, followed by application of the flannel jacket or bandages with the addition of local heat with water bottles or electric pads. K. A. Meyer (New York Medical Journal, July 5, 1913).

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NARCOTIC ADDICTION, TREATMENT OF.

Morphinism.—A patient addicted to morphine is given, according to the author's method, 5 compound cathartic pills and 5 grains (0.3 Gm.) of blue mass, and six hours later, if these have not acted, they are followed by a saline. After three or four abundant movements have occurred the patient is given in 3 divided doses at half-hour intervals, two-thirds or three-fourths of the total daily dose to which he had been accustomed. The physician should observe carefully after the second dose has been given; a few patients cannot comfortably take more than this amount. Six drops (from an ordinary medicine dropper) of the following "belladonna mixture" are given in capsules at the same time as the morphine:—

℞ Tincturæ belladonnæ, ℥ij (62 c.c.).
Fluidextracti xanthoxyli,
Fluidextracti hyoscyami, āā ℥j (31 c.c.).
(In making this mixture, a 15 per cent. tincture of the belladonna must be used or an equivalent amount administered if a weaker tincture is employed.)

The 6-drop dose of the mixture is given every hour for six hours. The dosage is then increased 2 drops. The mixture is continued hourly throughout the treatment, being increased by 2 drops every six hours until 16 drops are taken. It is diminished or discontinued at any time if the patient shows belladonna symptoms, but resumed at reduced dosage after these have subsided. If the patient has an unusual sensitiveness to belladonna it will usually show itself in the first six or eight hours, and the dosage can be cut to from 2 to 4 drops and raised by 1 drop every six hours. In others, again the dose may have to be increased to 18 or 20 drops before dryness of the throat occurs.

At the tenth hour after the initial dose of morphine, 5 more compound cathartic pills and 5 grains of blue mass are given. These should act in six or eight hours. If not, some vigorous saline is given, and after a thorough action, the second dose of morphine—usually about the eighteenth hour. This should be one-half the first dose. Ten hours after this, the cathartic pills and blue mass are again given, followed, if necessary, by a saline seven or eight hours later. After these have thoroughly acted at about the thirty-sixth hour, the third dose of morphine is given, consisting of one-sixth or three-sixteenths of the original dose. This is usually the last dose necessary.

Again, ten hours after the third dose of morphine, cathartic pills and blue mass are given, followed by a saline, and one expects at this time to see the bilious green stool appear. When this appears, after the bowels have moved thoroughly, and eighteen hours after the third dose of morphine, 2 ounces (60 c.c.) of castor oil are given. Sometimes it is necessary to continue the belladonna mixture over one or two more cathartic periods before giving the oil.

During this last period, when the bowels are moving from the cathartic pills and before the oil is given, the patients have their most uncomfortable time. Their nervousness and discomfort can be controlled usually by codeine, given hypodermically in ½-grain (0.3 Gm.) doses and repeated if necessary; or some form of the valerianates may help them. About the thirtieth hour of treatment these patients should be stimulated with strychnine or digitalis, or both, every four to six hours. To patients who cannot tolerate codeine, dionine should be given in doses of 2 or 3 grains (0.13 or 0.2 Gm.) or less. Either drug should be cut off as soon as possible after the castor oil has acted.

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The withdrawal pains can sometimes be relieved by hypodermics of some form of ergot and strychnine, or by massage, or sodium salicylate, or by a salicylic compound combined with antipyrin, phenacetin or pyramidon. The addition of codeine to these coal-tar products increases their analgesic effect. Exhaustion or indigestion should be treated symptomatically, and not by a narcotic. Insomnia may demand bromides or chloral; veronal should be avoided. The best hypnotic is muscular fatigue, and these patients should begin to exercise regularly as soon as their condition permits.

Patients who have been taking both morphine and alcohol should be treated for the morphine and can be tapered off at the same time from their alcohol. They are apt to have an active gastritis, which complicates their ability to retain drugs or food. Sodium citrate in doses of from 5 to 10 grains (0.3 to 0.6 Gm.) every hour best relieves this condition, with or without 10 to 20 grains (0.6 to 1.25 Gm.) of cerium oxalate or 5 grains of Tully's powder every two hours for one or two doses.

Alcoholism.—In treating an alcoholic the belladonna mixture, cathartic pills and blue mass are given simultaneously at the first dose. The belladonna mixture is continued every hour, day and night, as with the morphine patients, and twelve, twenty-four, and thirty-six hours after the initial dose they are again given 3 to 5 cathartic pills, followed by salines if necessary. After the last cathartics, the bilious stools will appear, and by the forty-fourth or forty-fifth hour castor oil is given. Sometimes the treatment has to be carried on over another period or even longer.

Elderly or very nervous patients who have been on a prolonged debauch are tapered off with 2 ounces of whisky for 4 or 5 doses in twenty-four hours. For insomnia a mixture of chloral hydrate, 20 grains (1.25 Gm.), morphine, ⅛ grain (0.008 Gm.), tincture of hyoscyamus, ½ dram (2 c.c.), tincture of ginger, 10 minims (0.6 c.c.), tincture of capsicum, 5 minims (0.3 c.c.), and water, ½ ounce (15 c.c.), is the best hypnotic. These patients should also have cardiac stimulants after the first twenty-four hours, or sooner if they are weak.

Cocainomania.—The cocainist should be treated like the alcoholic, except that no cocaine is given at any time, and strychnine or some such stimulant must be given from the beginning of the treatment.

The author's experience with this treatment has been that only 11 per cent. of the morphinists and 12 per cent. of the alcoholics return for treatment. The method is not offered as a cure, but as a means to obliterate the terrible craving during withdrawal. After the patients are freed from the desire for the drug, they are by no means cured of their former habits of life, environment, and habits of thought. Many are psychasthenics. The quickest method to bring them back to health is to send them to some physical trainer so that their bodies may be put in as perfect condition as their years and the state of their viscera permit. Alexander Lambert (Journal of the American Medical Association, June 21, 1913).

NEOSALVARSAN, ADMINISTRATION OF.

In a series of 150 cases the authors gave neosalvarsan intravenously in amounts equivalent to 0.1, 0.2, 0.3, 0.4 and 0.6 Gm. of old salvarsan in 10 c.c. of freshly distilled water with a glass syringe. A piece of small bore pure gum

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tubing one and one-half inches long was inserted between the syringe body and the needle in order to give a convenient and in some instances necessary flexibility to the needle. No complications followed in any case. The average reaction following the administration of neosalvarsan by this method was found to be less than that following the use of 75 to 100 c.c. by the gravity method. The neosalvarsan, because of its ready solubility, is well adapted for this simple method.

After selecting the vein for the injection, the skin is sterilized with iodine and alcohol. The syringe having been boiled in distilled water, the piston is introduced in the barrel and 10 c.c. of warm, freshly distilled water poured in. The neosalvarsan is now shaken into the syringe. The nozzle is replaced and solution brought about by tilting the syringe up and down. The needle is attached, air, if present, expelled from the syringe, the needle introduced within the selected vein, and the plunger drawn back. If the needle is within the vein the blood will flow into the syringe. A few drops of blood in the glass nozzle afford ample evidence that the needle is within the vein. The fluid is then slowly injected. J. R. Thrasher and Bernard Erdman (Journal of the Indiana State Medical Association, May, 1913).

NON-TUBERCULOUS APICAL LESIONS.

Non-tuberculous lesions of the apex met with by the author are grouped by him as follows: (1) Collapse induration, usually found in mouth breathers. (2) Apical catarrhs after an attack of influenza or in persons suffering from pulmonary emphysema or with defective muscular development. (3) Apical indurations found in persons with heart lesions.

(1) In mouth breathers one often finds retraction of the right apex, dullness, altered breath sounds, and even râles which are circumscribed and localized. Such patients are often treated for some time as tuberculous. Many of the rapidly cured incipient cases are, in fact, instances of collapse atelectasis of the apical parenchyma due to interference with the entrance of air into the right apex in mouth breathers. Those who neglect the nasal obstruction for a considerable time, and do not have their polypi, adenoids or hypertrophied tonsils, etc., removed, may ultimately get collapse induration of the right apex which remains permanent. Collapse atelectasis and induration are to be borne in mind in all right-sided apical lesions occurring in mouth breathers, showing no tubercle bacilli in the sputum, and manifesting no tendency to follow the usual course of pulmonary tuberculosis, with fever, night sweats, tachycardia, malaise, languor, progressive loss of weight, etc. In such cases the fact that the patient has been working all along in spite of his cough, which may date back to childhood, and has developed physically at a normal rate, speaks very strongly against tuberculosis.

(2) Physical signs of a lesion at one apex occurring after an attack of influenza, or met with in persons with pulmonary emphysema or defective muscular development, especially in young women and among indoor workers generally, should not be hastily pronounced as indicative of tuberculosis. A person who never coughs and has suffered no progressive loss of weight, anorexia, malaise, etc., for months before the onset of an attack of grippe may have a simple localized apical catarrh simulating tuberculosis. On the other hand, most cases of tuberculosis give a

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history of "grippe," "colds," etc. Clinical observation for a few weeks, with the judicious use of the thermometer and several sputum examinations, usually clears up the diagnosis even where the physical signs persist for months.

(3) In persons having a defect of the mitral valve a diagnosis of tuberculosis should not be made without positive bacteriological findings. It is exceedingly rare to find mitral stenosis complicated with tuberculosis. Yet there are often met cases of mitral stenosis with symptoms and signs of tuberculosis—subfebrile temperature, cough, hemoptysis, tachycardia, loss of weight, dullness, altered breath sounds, râles, etc., localized at one apex—to a perplexing degree. Often only prolonged careful observation will determine whether a given case of mitral disease is complicated by lung tuberculosis or not. The author's rule has been to consider such cases tuberculous only when finding bacilli in the sputum or signs of cavities on physical exploration. M. Fishberg (New York Medical Journal, July 5, 1913).

OTITIS, PHENOL AND ICHTHYOL IN.

While comparing the effects of phenolized glycerin and ichthyol in glycerin in certain external and middle-ear diseases the author, unexpectedly lacking some fine gauze packing with which to make tampons, took some packing from a bottle of 10 per cent. phenolized glycerin and, squeezing it partly dry, dropped 10 per cent. ichthyol in glycerin on it, and used the packing in a case that had resisted all previous treatment. The packing was removed in two hours and the tumefaction found to have very greatly lessened. Upon continuing hot 2 per cent. boric irrigations four times a day, with the addition of this tampon left in place two hours daily, the rapidity of improvement was remarkable and recovery complete. In extensive further trials, a mixture containing 5 per cent. each of phenol and ichthyol in glycerin was found very efficacious in otitis externa diffusa, myringitis, otitis externa circumscripta ("furuncle of the canal") and in connection with other treatment, as good as any ear-drops in acute otitis media; and especially useful in otitis externa caused by and complicating chronic suppurative otitis media. R. M. Nelson (Journal of the American Medical Association, March 8, 1913).

OXYHEMOGLOBIN, EFFECT OF ORGANIC ARSENICALS ON.

Experiments are described by the authors which led them to conclude that: (1) neosalvarsan reduces oxyhemoglobin *in vitro;* (2) this property is the result of the union of the salvarsan radical with the formaldehydesulphoxylate of sodium group; (3) various other organic arsenical compounds experimented with, including sodium cacodylate, disodium methylarsenate, and salvarsan, failed to exhibit the reducing property possessed by neosalvarsan; (4) *in vivo* this action in reducing oxyhemoglobin does not appear to take place, and it cannot therefore constitute an objection to the intravenous introduction of this drug. R. Dalimier and J. Jacquemar (Bulletins et Mémoires de la Société de Médecine de Paris, June 13, 1913).

PERINEUM, PROTECTION OF.

As soon as the head begins stretching the perineum, the author begins to bathe the latter with sterile water and compound solution of cresol, using sterile pledgets of cotton and rubber gloves. When the head begins to appear, he pushes the anterior vaginal floor backward and upward and at the same time

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pushes the occiput toward the bregma, attempting as far as possible to flex the head more and more. If the perineum seems very tight when the head no longer recedes with pains and the perineum is on the stretch, obstetric anesthesia is given. The nurse then extends the legs and at the same time everts the feet, bringing the thighs as close together as possible while giving the physician a place to work. This brings the buttocks on each side inward and makes available more tissue for the perineum. The vulva is then pushed back from the child's head with sterile moistened pledgets, beginning at the sides and always working between pains. While doing this the author is attempting to flex the head as much as possible and to deliver the apex of the vertex between pains. As soon as this is accomplished the anesthetic is pushed or the woman told to yell, to have her attention diverted. Directing the nurse to maintain the position in which the legs are together, with the feet, legs and thighs rotated outward as much as possible, the author tries to effect delivery between pains. The shoulders of the child are given the same sort of attention as the head. If the perineum seems so tight that a tear is apparently inevitable, then it is best to nick the vagina at the sides. Greer Baughman (Journal of the American Medical Association, February 1, 1913).

PSORIASIS, TREATMENT OF.

Prophylaxis.—Where the patient is not in good general health, and associated pathological processes exist, these are to be treated first. This has often resulted, in the author's experience, in a cure of the skin lesions. General tonic treatment, country air, change of diet, etc., often work wonders, but as the general health again becomes poor, recurrence is the rule. Restriction of diet is a valuable measure. Alcohol and excesses of all kinds must be prohibited. Since in people susceptible to attacks, the least traumatism, as scratching or rubbing, will bring out the lesions, patients are warned against the use of a tight belt, suspenders, and tight lacing.

Curative Treatment.—The parts are first thoroughly washed with spirit of green soap and water. Then, in cases having only a few lesions, the following is painted over the affected areas:

℞ Chrysarobini, ℥ss-j (2-4 Gm.).
Acidi salicylici, ʒss (2 Gm.).
Collodii flexilis, ℥j (30 Gm.).—M.

The chrysarobin is also employed by the author as an ointment, this being a more active form of treatment for some cases:—

℞ Chrysarobini, ʒj (4 Gm.).
Acidi salicylici, ʒss (2 Gm.).
Petrolati, ℥j (30 Gm.).—M.

He continues to use the ointment until scaly lesions drop off, then pushes the ointment a little longer, and finally covers the remaining erythematous area with a zinc oxide ointment.

In cases with a larger number of lesions, the same procedure is adopted, only larger amounts of chrysarobin ointment are used. It should be pushed until it produces a slight dermatitis, then covered with zinc oxide ointment. Each night the drug is applied, and in the morning a bath is taken. In some individuals a 5 per cent. chrysarobin ointment will produce a severe dermatitis and therefore only a 2 or 3 per cent. ointment is used. The author usually begins with 3 per cent. and gradually increases the percentage until 10 or 15 per cent. chrysarobin is used. The discoloration of the skin soon passes away. For the scalp, one should only use tar,

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ammoniated mercury, or pyrogallol ointment.

The next best result is obtained with an ointment of pyrogallol:—

℞ Pyrogallolis, 3j-ij (4-8 Gm.).
Petrolati, ℥j (30 Gm.).
M. et ft. unguentum.

This produces less dermatitis than chrysarobin and may be used in large amounts. Tar is especially adapted to face and scalp lesions, but care must be used not to prescribe excessive doses of mercury:—

℞ Olei cadini, 3j (4 Gm.).
Hydrargyri ammoniati, gr. xl (2.5 Gm.).
Petrolati, ℥j (30 Gm.).—M.

If the continuous use of chrysarobin ointment does not help, all external treatment is stopped, and a course of internal treatment given alone for a period of from two to four months: Fowler's solution in 5- to 15- minim (0.3 to 1 c.c.) doses three times a day after meals. Sometimes cacodylate of sodium is used by deep injections with excellent results. Not all cases, however, will respond to internal treatment, and in such the combined internal and external treatment with chrysarobin ointment is used. Many patients are cured by this combined method. The internal administration of potassium iodide benefits some of the chronic cases.

The use of the Röntgen rays for chronic obstinate patches has given excellent results, with almost permanent cures. The lesions are exposed for about two to seven minutes, three times weekly, using a soft tube and placing the parts from six to twelve inches from the target. Treatment is given for two weeks, then suspended for two weeks; then another course is allowed. From four to eight weeks' treatment cures the psoriatic patch.

One very severe case was given an intravenous injection of 0.45 Gm. of neosalvarsan. In forty-eight hours the lesions seemed to be getting smaller, but in a few days they were the same as before the injection. Another dose of 0.45 Gm. seven days later had no effect on the disease whatever. J. Bressler (New York Medical Journal, April 5, 1913).

SALVARSAN TREATMENT, DANGERS AND COMPLICATIONS OF.

The risk to life from salvarsan is extremely small; but it is useless to deny that there has been, and probably still *is*, a very slight risk to life. *Deaths* group themselves under four headings: (1) those with symptoms of meningitis; (2) those with symptoms of nephritis and uremia; (3) those with toxic symptoms associated with degenerative processes occurring in the liver; and (4) those with symptoms of pulmonary embolism. In the majority of the few fatal cases recorded the symptoms commence only after the second or a subsequent dose of salvarsan. Some patients appear to be exceptionally susceptible to salvarsan, and probably the deaths occurring under the first three headings are generally the result of a cumulative action of the drug, the second injection being administered before the elimination of the first has been completed.

Short of death, *complications* most likely to cause grave anxiety are those produced by the toxic action of the drug on the body in general (and particularly on the meninges and kidneys), and by phlebitis and thrombosis in the vein which has received the injection. Among 500 cases which the author has treated 5 gave cause for anxiety. Symptoms occasionally met with, but not of sufficient severity to cause anxiety, were rise of

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temperature, vomiting, rigors, headache, phlebitis, thrombosis, diarrhea, colic, jaundice (once), cardiac symptoms (once, in a case of aortic regurgitation), conjunctivitis, herpes (once), slight transient albuminuria (3 times), and pain in the epigastrium, back, abdomen, or limbs. That salvarsan treatment involves a danger of blindness seems absolutely without foundation.

Precautions to be Taken to Avoid Complications.—The blood-pressure of the patient should be lowered so that the vascular system may be enabled, without effort, to accommodate the additional 400 or 500 c.c. of fluid. The author's routine is to administer a pill the night before and a brisk saline purge on the morning of the injection. No food or drink whatever is permitted for five hours before the injection.

The solution should be prepared immediately before use. If during the injection of the salvarsan solution any local swelling develops at the site of injection or the flow stops, the clip should be at once applied to the tubing, the needle removed, and hot fomentations applied to the area.

The patient is kept in bed for twenty-four hours and then allowed to get up, provided the temperature is normal, the site of the injection free from all phlebitis, and no albumin in the urine. If there is any temperature the patient is advised to remain in bed until the temperature has been normal for twenty-four hours. Alcohol is forbidden for a week after the injection. The patient is encouraged to drink large quantities of barley water for forty-eight hours, and only a milk diet is permitted for the first twenty-four hours.

The interval between the injections should not be shorter than one week. If a patient shows any symptoms of intolerance the author advises a month's interval between injections. He uses a Marsh apparatus and some filter paper soaked in silver nitrate to make a rough guess at the amount of arsenic that is being eliminated. It is advisable that the second dose be not given while arsenic is present in the urine.

The slight risk of serious complications or sequelæ from salvarsan is more than counterbalanced by the therapeutic results obtained. All sufferers from syphilis, in whatever stage, and all cases of parasyphilis, should as a matter of routine be permitted the advantage of salvarsan treatment. H. W. Bayly (Lancet, May 24, 1913).

TINNITUS AURIUM, TREATMENT OF.

The most frequent cause of tinnitus is stuffiness of the Eustachian tube. Upon relief of this partial stenosis of the tube depends relief of the tinnitus. To this end dionin, as used in ophthalmological practice, may be employed. One simply injects, with a catheter, a 2 to 5 per cent. watery solution of dionin, using sufficient force to cause it to penetrate the tympanic cavity. One or two repetitions succeed, with rare exceptions, in effecting freeing of the tube, with relief of noise and usual gain in hearing. B. Alexander Randall (Transactions of the American Otological Society, vol. xii, part iii, page 663, 1912).

TUBERCULOSIS, DIAGNOSIS AND TREATMENT OF.

The author asserts that in a short series of cases the Moro reaction caused him to detect the presence of tuberculosis in its earliest stages, and enabled him closely to follow the effects of treatment. Arrested development, emaciation, a general laxity, and a short, dry, hacking cough were the principal, though

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rather obscure, symptoms which were taken as suggesting the use of the Moro salve, consisting of equal parts of tuberculin and lanolin. This, when rubbed in at the pit of the stomach, produces within two days a characteristic efflorescence in the positive cases.

The aim of the author is to recognize the existence of tuberculosis by means of the specific reaction at a time when the sputum is still free from bacilli, then to ward off further advances of the morbid process by the administration of pills consisting of 1 grain (0.06 Gm.) of quinine and ⅕ grain (0.012 Gm.) of iodoform, together with creosote. Results obtained with this plan seem to the author to have been very good, and he suggests that by further work on lines such as these a considerable degree of control over the disease may be secured. C. Am Ende (Medical Record, April 26, 1913).

TYPHOID VACCINATION.

Typhoid vaccine as a prophylactic provides almost certain protection from typhoid fever. As a therapeutic agent in active typhoid it is still in the experimental stage. A sufficient number of cases have not been studied to enable one to draw definite conclusions. The results so far obtained, however, have been favorable. Typhoid vaccine as a therapeutic agent in chronic typhoid carriers, while it does not offer a certain cure, is the method of treatment that has given the best results. Young (Boston Medical and Surgical Journal, March 13, 1913).

VACCINAL ULCERS, TREATMENT OF.

The author states that the constant application of antistreptococcic serum as a wet dressing to indolent ulcers resulting from extraneous infection of the vaccination site will invariably cause marked improvement. The wound is filled with the serum, a small wet dressing of the latter applied, and over this is placed an oiled silk dressing in order to maintain the moisture as long as possible. The dressings when dry become very hard and stiff. In order to obviate the unpleasantness due to this the author removes the oiled silk and remoistens the dressing, without disturbing it, three or four times daily. Sexton (Archives of Pediatrics, February, 1913).

VERONAL POISONING, CASE OF.

The question having recently been raised as to the amount of this drug which may be taken without fatal results, the author reports the following case:—

A young man aged 20 was under treatment on account of recurrent attacks of vomiting, associated with a dilated stomach. These attacks had been present for many years past from time to time, and his appendix had been removed some two months previously. He had returned home extremely exhausted, and having taken a hot bath in the afternoon, fell asleep. Toward night he complained of intense vertical headache and took tabloids of veronal at frequent intervals, altogether 56 grains (3.6 Gm.). When seen the next morning, he was observed to be suffering from some kind of poisoning. The pupils were widely dilated, but reacted slightly; the knee-jerks and plantar reflexes were present, and he was in a semiconscious condition. He was very ataxic, did not recognize people, wandered in his talk, and slept the greater part of the day. The heart action was extremely feeble, intermitted at times, and was rapid. On the next day he was better, but still drowsy, semiconscious, and very ataxic.

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During the night he was seized with four epileptiform convulsions, but did not foam at the mouth. He was rigid. After these attacks he was very much exhausted, but on the next day was better, sitting up in bed and talking. He had, however, another slight convulsion in the morning, in which there was twitching, and his respirations were rapid, about 50. He complained of cardiac pain, and was very violent. He then passed into a condition of exhaustion and semidrowsiness. He was quite on the *qui vive* at the slighest noise, and wanted to know to what it was due, but had no recollection of his attacks during the night, and felt as if he was dying. On examination nothing abnormal could be made out. He was perspiring freely, the pupils were of medium size, and the tongue was clean. Next day he had two fits, and is said to have been amblyopic for a short time. There were no further symptoms, and he gradually recovered. G. N. Pitt (Lancet, February 8, 1913).

WHOOPING-COUGH, VACCINE TREATMENT OF.

The author treated 33 cases of whooping-cough with a vaccine containing the *Bacillus pertussis* alone and 10 other cases with a combined vaccine containing, to the cubic centimeter, *B. pertussis,* 50 million, and *Staphylococcus aureus* and *Micrococcus catarrhalis,* each 20 million. While the average period required to cure whooping-cough with the best drug treatment available was from seven to twelve weeks, the average period in the 33 cases given pertussis vaccine was four and a half weeks, and this, the author believes, could have been shortened by administration of larger doses at shorter intervals. The dose used was from 20 million in the mild cases to 60 million in the severe. Cases seen before the paroxysms had attained their height seemed to respond more quickly and their course was shortened. In all cases, however, after 1 to 3 injections, the number and severity of the paroxysms were markedly lessened. The younger children seemed to respond more quickly to the vaccine, probably because they received relatively larger doses for their ages than the older children.

In the 10 cases given the combined vaccine the average duration of the attack after the beginning of vaccine treatment was about three and a half weeks.

The vaccine was given under antiseptic precautions, subcutaneously, with the ordinary glass syringe, the injection being given either in the abdomen or buttocks. No constitutional symptoms or local reaction followed. All the cases treated with the vaccine were complete cures, with no very serious complications. The author asserts that the vaccine treatment is by far the best treatment at command for whooping-cough.

Three children in families where others were having the disease were given prophylactic doses of the pertussis vaccine. Two, in one family, 5 and 3 years old, received 4 and 9 injections, respectively, of 20 million each in one month, while the third, 7 years old, in another family, received 3 injections of 25, 50 and 75 million, respectively, of the combined vaccine. These children, constantly exposed, were watched over a period of two months and did not develop the disease. E. Mather Sill (American Medicine, June, 1913).

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Clinical Summary

Practical hints from articles and abstracts that have appeared in the Monthly Cyclopedia and Medical Bulletin during the current year.

Acne. TREATMENT. 1. Following lotion advised: Zinci sulphatis, potassæ sulphuratæ, sulphuris præcipitati, of each ʒj; aquæ, ʒiv; to be applied at night. 2. To keep open orifices of follicles, resorcinol in 10 to 15 per cent. paste, recommended. 3. If skin thick, sluggish and oily: Preliminary washing with tincture of green soap. 4. Warm water may be used after incising pustules, to favor bleeding, but for washing cold water is preferable. 5. X-rays of service (*a*) to increase local blood-supply and improve resistance; (*b*) to cause atrophy of sebaceous glands. 6. High-frequency current useful to reduce induration of nodular acne. 7. Massage or local manipulation, to facilitate drainage of ducts. 8. Dermal curet, when pustules cured and superficial epithelium somewhat macerated by resorcin. *Chipman.* Page 283

Adenitis, Tuberculous. TREATMENT. 1. Produce Bier hyperemia by applying elastic band about neck for a few hours before opening abscess. 2. Make very small straight incision into gland, evacuate contents with dull spoon, using no force, and, without washing or wiping out cavity, introduce a 2 to 4 per cent. solution of formaldehyde in glycerin, and seal incision. Primary healing results in 50 per cent. of cases; others are treated by further injections. 3. In cases of extensive involvement, prescribe enzymes of yeast internally. 4. In the few cases that do not respond satisfactorily, resort to radical operation. *Brown.* 303

Albuminuria. TREATMENT. Prophylactic doses of Roux's antidiphtheritic serum in 128 cases of scarlet fever found to lower greatly frequency of albuminuria in these cases. Anaphylactic effects extremely rare with this serum. In all cases of albuminuria originating from throat inflammation, as well as in albuminuria in general where other measures have proven ineffective, the serum should be given hypodermically in doses of 10 c.c. (2½ drams) every three or four days. *Galliot.* 36

Anal Fissure. TREATMENT. Conservative measures advocated in painful fissure. In examining for it have patient bear down, or blow in some orthoform. In treatment: 1. Apply thigenol on cotton on end of probe, which is then withdrawn, leaving cotton in position. 2. Patient to drink tumblerful of hot water an hour before breakfast, and another, either hot or cold, in evening. 3. To insure softness of motions: Tincture of cochineal and peppermint oil, of each, ♏x (0.6 c.c.); syrup of glycerin, ʒj (4 c.c.); soft paraffin, ℥j (31 Gm.). If this objectionable, add 20 grains (1.3 Gm.) of powdered cocoa, or 10 to 20 grains of powdered agar. Dose of the mixture, 1 teaspoonful four times daily. 4. Where constipation previously present: Some aperient, such as confection of senna, ʒss-j (2-4 c.c.), to be given in addition. 5. After bowels act: Patient to wash parts and apply some bland ointment, *e.g.*, one of eucalyptus. 6. Where violent sphincteric spasm and pain, dilate under gas, and, if sentinel pile present, remove with forceps. *Baldwin.* 109

Anemia. TREATMENT. Administration of olive oil and glycerin, equal parts, in gradually increasing doses two hours after each meal considered a valuable measure. *Bram.* 47

Appendicitis, Acute. TREATMENT. After operation in children: 1. Give warm saline solution by rectum, 8 to 10 ounces every two or four hours; administer slowly with catheter and funnel. 2. Feed with a decoction of crushed raisins, alternated with albumin water. 3. Open bowels as soon as possible. If no normal movement within twenty-four hours, give glycerin enema; use syrup of senna as routine aperient. *Stiven.* 37

Appendicitis, Chronic. DIAGNOSIS. In cases of chronic appendicitis with digestive symptoms, induction of referred pain or distress in the epigastrium, left hypochondrium, umbilical, left inguinal, or precordial region by a continuous firm pressure over the appendix (McBurney's point) is a valuable test in deciding when and when not to recommend operation. *Aaron.* 283

Arteriosclerosis. TREATMENT. 1. Rest for whole body and particularly any organs specially involved in sclerotic process. 2. Diet such as will avoid all digestive disturbances. 3. Judicious restriction of fluids. 4. Systematic hydrotherapy, carbon dioxide baths or electric baths. 5. Iodides only where angina pectoris, syphilis, or eye affections due to sclerosis of retinal artery. 6. Diuretin, especially valuable in angina pectoris and tobacco heart; lowers blood-pressure markedly after some weeks' administration. *Von Noorden.* 346

Arthritis, Chronic. TREATMENT. Certain joint cases, rebellious to all other treatment, can be arrested by proper diet combined with colonic lavage. Breakfast: Cereal, small amount; toast with butter; imitation cereal coffee. Between breakfast and lunch: Buttermilk, 2 glasses; water, 1 glass. Lunch: Clear soup (or lettuce or spinach); 1 roast potato; 2 slices toast; imitation coffee. Between lunch and dnner: Buttermilk, 1 glass; water, 1 glass. Dinner: Clear soup (or twice a week small amount roast chicken, or

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1 egg); toast or lettuce; imitation coffee; apple sauce. Between dinner and bedtime: Buttermilk and water. Daily simple enema followed by high colonic lavage with about 1½ quarts normal saline solution, until washings return fairly clear. Adapt diet to individual caloric needs and with constant regard to weight. *Pemberton.* Page 45

Arthritis, Gonorrheal. TREATMENT. A. Acute. 1. Sodium salicylate, 1 to 4 drams (4 to 6 Gm.) or acetyl salicylic acid, 20 to 30 or 40 grains (1.3 to 2.6 Gm.), freely diluted, during febrile stage. 2. Where intolerable pain and insomnia or threatening rupture of synovial membrane or subluxation, puncture, repeated if necessary, and active counterirritation. 3. In suppurative and grave forms, arthrotomy, either simple or followed by iodine or zinc chloride. 4. Passive movements and massage, when acute symptoms subsided. Other available measures: 5. Antigonococcic vaccines. 6. Antimeningococcic serum. 7. Autoserotherapy. 8. X-rays or radium in obstinate cases. 9. Bier's hyperemia. 10. Hot-air treatment especially; air in hot-air-box at 175° to 210° F., for one-half to one hour at a time. B. Chronic. Additional special measures: 1. Disinfection of genitourinary tract. 2. Thyroid substance, 2-grain (0.12 Gm.) cachets one to three times daily. 3. Fibrolysin injections, 30 minims (2 c.c.) daily for a fortnight, where joint deformity present. *Dardel.* 236

Arthritis, Rheumatoid. TREATMENT. Atophan found most efficient drug in relieving pain in a case of rheumatoid arthritis. *Kahlo.* 350

Asthma, Bronchial. TREATMENT. 1. When patient first seen during an attack, give 10 grains (0.6 Gm.) of blue mass or an equivalent amount of calomel with soda, followed by salts next morning. 2. Morphine and atropine injection, only if patient suffering intensely. 3. Sodium iodate, gr. iv-v (0.25-0.3 Gm.) every four to six hours, in capsules, given with food (contraindicated in the tuberculous, especially if hemoptysis). 4. Repeat mercurial purge if attack not markedly better in twenty-four hours. 5. Diet. During attacks: Broths every two to four hours. In intervals between attacks: Enough plain, coarse food to satisfy hunger and no more. Soups, clear of fat; fresh fish; raw oysters or clams; tender and lean meats; all vegetables except onions, cabbage, cucumbers, corn on cob; potatoes, peas, and beans only sparingly; only well-baked or toasted bread; rice, cereals, and eggs in moderation; no raw fruits; pastry, sweets, and any articles found by experience to disagree to be avoided. Careful scrutiny of patient's selection of foods required. Heaviest meal to be taken at noon; light supper. *Oettinger.* 37

Theobromine sodium salicylate (diuretin) found to do good in many cases. Often it is sufficient to give 15 to 30 grains (1 to 2 Gm.) before time of expected paroxysm. The product can be taken for weeks without harm. *Meyer and Cahn.* 179

Inhalation of 1: 1000 epinephrin solution in a special very fine spray from small atomizer advised for arrest of a paroxysm by patient at any time. In established severe attacks, following combination recommended: Epinephrin solution, 9 c.c.; atropine sulphate, 0.01 Gm.; cocaine hydrochloride, 0.025 Gm.; distilled water, 1 c.c. *Staübli.* 284

Combined injections of 0.0008 Gm. (1/80 grain) of epinephrin and 0.04 Gm. (⅔ grain) of pituitary extract in 1 c.c. (16 minims) of water used with marked success in arresting paroxysms in 300 cases. More effectual than epinephrin alone. Second injection required in only 10 instances. *Weiss.* 296

Bronchopneumonia. TREATMENT. Creosote carbonate recommended for use in bronchopneumonia and obstinate chronic bronchitis in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first three years; in fifth and sixth years, 20 drops (2 Gm.). *Hunäns.* 162

Burns. TREATMENT. Where patient shocked and cannot stand anesthesia, use dressings of saturated picric acid solution for two days. Then clean up burns under chloroform general anesthesia with 70 per cent. alcohol, rubbing vigorously, and dress with same, on gauze, covered by dry gauze, cotton, and bandage. Dress daily in same way under anesthesia for eight days; then apply boroglyceride gauze dressings, when healing will rapidly follow. In burns involving whole skin, cut off sloughs with scalpel, without waiting for separation. To avoid excessive alcohol absorption, one may interpose boroglyceride gauze between burn and alcohol gauze. *Milligan.* 410

Carcinoma. TREATMENT. Silicic acid internally, 1/6 to 1/3 grain (0.01 to 0.02 Gm.) daily, advised to prevent recurrence after cancer operations. In cancer of digestive organs, however, not more than a few milligrams should be given daily. *Benedikt.* 242

Carcinoma, Esophageal. TREATMENT. Hydrogen dioxide, 1 dessertspoonful of 1 to 3 per cent. solution every hour, found to be valuable palliative measure where stenosis apparently complete. Within twenty-four hours stenosis is overcome, and later purées and even solid food can be swallowed. Subjective symptoms disappear and patients gain in weight. Measure of little use, however, in scirrhous form of cancer. *Fradiss.* 109

Carcinoma, Uterine. TREATMENT. Method described value of which depends on (1) destruction of gross mass of carcinoma in uterus by the actual cautery heated to a little less than dull cherry-red heat; (2) application of heat to pathological tissues until whole pelvis has its temperature raised to

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120° F. Uterus is thrown off as charred lump and remaining shell becomes a cicatricial mass free of carcinoma. Cachexia disappears and cure is more probable than with any other method. *Percy.* Page 234

Cardiovascular Disease. TREATMENT. Ideal diet in presence of impaired circulation consists essentially of bread and butter, with some milk to supply fluid, and enough cheese to make up protein requirements; fruits and vegetables to be added in moderate amount. *Bishop.* 108

Reference made to cases with high blood-pressure, hypertrophied heart, without notable thickening of superficial arteries or renal changes of importance. Symptoms usually respiratory or gastric, occasionally vertigo, tinnitus, or peripheral numbness and tingling. Measures advised: 1. Rest, especially mental. 2. Reduction in quantity of food taken, especially of purin-containing articles; small evening meal. 3. Restriction of alcohol, and especially tobacco. 4. Bowels to be kept open with phenolphthalein and rhubarb, or compound licorice powder, and calomel or blue mass occasionally. 5. Nitrites, only to relieve symptoms; where nitroglycerin fails, sodium nitrite, ⅛ to 2 or 3 grains (0.007 to 0.2 Gm.), or erythrol tetranitrate, ½ grain (0.03 Gm.) useful. 6. Sodium iodide, two hours after meals, in water or milk. 7. Digitalis in small doses where dyspnea or even vertigo. 8. Venesection at times very useful and effective. *Riesman.* 288

Chorea. TREATMENT. Twenty-five cases, in children of 8 to 19 years, in which abnormal movements rapidly disappeared after 3 or 4 intravenous injections of 0.2 to 0.35 Gm. of salvarsan, given weekly. Recovery regularly after three or four weeks. General condition also always greatly ameliorated. *Marie and Chatelin.* 38

Constipation. TREATMENT. Stubborn constipation in infants is relieved by giving 1 dram (4 c.c.) of olive oil once or twice daily. Constipation in neurasthenics is also benefited. *Bram.* 47

Diabetes Mellitus. TREATMENT. For first two weeks restrict to careful antidiabetic diet, unless sugar in urine practically disappears in less time. Then cautiously increase carbohydrates, always warning patient of danger of overeating *permissible* articles. Should sugar persist, put to bed and restrict to 1 raw egg and 2 ounces of olive oil 3 or 4 times a day. Continue free use of a mildly alkaline drinking water. If any acidosis symptoms result, decrease amount of oil and give small quantities of carbohydrates. Proper mastication an important detail in treatment. For constipation, use: Olive oil, castor oil, glycerin, of each, 160 parts; gum arabic, 18; flavoring (oil of cassia or gaultheria), 0.5. Best diabetic flour is: Unadulterated soy-bean flour, 350 parts; unground poppy seed, 30; eggs, 250; pure baking powder, 15; water, 340. *Hodgson.* 39

Cultures of lactic acid bacillus given to 13 cases in doses of 4 to 16 c.c. (1 to 4 drams) three times daily. Indican and sugar in urine both markedly reduced. Results probably due not only to removal of putrefaction, but also to partial inhibition of carbohydrate digestion by the bacilli, as indicated by experiments *in vitro*. *Horowitz.* 235

Necessity for individualization in prescription of diet emphasized. Low carbohydrate tolerance does not imply necessity of ingestion of an excess of meat. In all grave cases meats are dangerous. Vegetables are to be preferred, and those should be prescribed which, while containing a high percentage of carbohydrates, are well assimilated in the individual case. Large amounts of fats are often dangerous. *Graul.* 286

Iodine treatment considered indicated in diabetes in elderly persons. Sajodin, 3 tablets of 0.5 Gm. (7½ grains) each, given daily one after meals, found to cause marked reduction of previously obstinate glycosuria and general improvement in 3 cases aged, respectively, 66, 52 and 62 years. *Lorand.* 412

Diphtheria. TREATMENT. Intravenous administration of antitoxin advised in cases of malignant diphtheria; 5000 units thus given are equivalent to 20,000 subcutaneously. No bad results from intravenous use in nearly 200 cases. Serum to be warmed to blood heat before injecting. In little children one must cut down on the vein. Intramuscular injections are absorbed in one-half the time required by subcutaneous ones. *Park.* 413

Dupuytren's Contraction. TREATMENT. Thyroid substance continuously administered in doses of 0.1 Gm. (1½ grains) found markedly beneficial in 5 cases. *Gilbert.* 173

Dysentery. TREATMENT. Measures useful in form of dysentery sometimes epidemic in institutions discussed. 1. Isolate patient and put to bed. 2. Give calomel, 1 grain (0.06 Gm.), followed in two hours by mixture of dilute sulphuric acid, ℥iij (12 c.c.); compound tincture of cardamom, ℥j (30 c.c.), in water, enough to make ℥viij (250 c.c.); ℥j every two hours during the disease. 3. Olive oil, 1 tablespoonful every two hours; no other food. 4. Boiled water at frequent intervals. 5. In the aged, debilitated or arteriosclerotic, 1 teaspoonful of brandy every three hours. *Jones.* 163

Eclampsia, Puerperal. TREATMENT. Report of 11 cases in which squeezing out of colostrum from breasts, thoroughly carried out, appeared usually beneficial. *Walcher.* 286

Edema of Extremities. TREATMENT. Where edema of legs resisted all measures, especially where incision not permitted, good results obtained from local use of hypertonic saline solutions—25 to 50 Gm. (¾ to 1½

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ounces) of sodium chloride to 1 liter (quart) of distilled water. Soak gauze compresses lightly in this, wrap around legs, and cover with thick layer of absorbent cotton, held in place by bandages. Leave dressing on overnight. Equally good results in edemas due to broken compensation, Bright's disease, etc. *Pathault.* Page 40

Endocarditis, Chronic. TREATMENT. Three cases stated to have been cured by injections of fibrolysin in conjunction with concussion of the seventh cervical spine to elicit the cardiac reflex of contraction. *Abrams.* 394

Epididymitis, Gonorrheal. TREATMENT. Epididymotomy performed in 16 consecutive cases, 1 bilateral. Result: Sudden and permanent relief from pain; defervesence in two days; rapid reduction in swelling; prompt healing; early convalescence without relapse. *Culler.* 348

Epilepsy. TREATMENT. Solution of 1 part of phosphorus in 10 parts of oil used in 9 cases of severe epilepsy, and generally caused pronounced reduction in frequency of attacks. Enterogenous autointoxication to be overcome before phosphorus begun. *Leubuscher.* 348

Epistaxis. TREATMENT. With patient sitting in chair, stand behind him, place index fingers of both hands beneath body of lower jaw on each side, with thumbs resting behind angles, and make gentle traction upward upon head, and simultaneously extend it backward as far as patient can comfortably bear. Sets up artificial anemia in nose and head in general, causing epistaxis to cease. Desist in one or two minutes, or consciousness may be partly or wholly lost. *Ritschl.* 165

Eye Injuries. TREATMENT. Following formula used for disinfection of cornea, especially after extraction of foreign bodies: To 2¼ grains (0.15 Gm.) of stovaine, finely pulverized and dissolved in 5 drops of oil, add, after mixing, preferably on a water bath: Hydrated wool-fat, gr. lxxv (5 Gm.), and petrolatum, 3iiss (10 Gm.). Then add gradually: Iodine, gr. ii¼ (0.15 Gm.); sodium iodide, gr. ivss (0.3 Gm.); water, ♏xxiv (1½ Gm.). *Dewaele.* 237

In simple abrasions of cornea: 1. Irrigate conjunctival sac thoroughly with normal saline or boric acid solution. 2. Drop argyrol in eye. 3. Fill conjunctival sac with a sterile medium consisting of petrolatum, ʒvj (180 Gm.); mercury bichloride, gr. j (0.06 Gm.), and sodium chloride, gr. v (0.3 Gm.). Where cornea already infected and ulcer present, sterilize area with phenol, removing excess with alcohol; or else, touch lightly with platinum probe at red heat. In wounds of cornea: 1. Cleanse eye thoroughly. 2. Cut off any projecting iris. 3. Drop in atropine and argyrol. 4. Fill with sterile petrolatum. In burns of eye: 1. Fill with sterile petrolatum. 2. Move eyeball and lids frequently to prevent adhesions. Where sclera wounded: Draw conjunctiva over wound and stitch together. *White.* 240

Scarlet red, 1 per cent. in petrolatum or petrolatum and lanolin, equal parts, found to promote rapid healing in corneal or conjunctival abrasions, wounds, or burns. A minute portion of the ointment is placed on conjunctival surface of everted lower lid and a pad and bandage applied, once daily or on alternate days. Atropine also to be used, if indicated. *Allan.* 359

Fetal Position. DIAGNOSIS. More general use of abdominal examination for diagnosis of fetal position and presentation urged, being safer and generally more satisfactory than vaginal and combined methods. Even in very fleshy patients and in polyhydramnios, pressure on opposite sides of abdomen with one hand, while palpating with other, will often enable one to feel distinctly the fetal parts. *Phillips.* 287

Fibroid Phthisis. TREATMENT. Where profuse expectoration of pus, creosote often best remedy. Dose, 3 to 5 drops (0.18 to 0.3 c.c.) three times daily, given over a long period. Creosote carbonate more easily tolerated; dose, 15 to 25 drops (0.9 to 1.5 c.c.) per day. *Fishberg.* 180

Filariasis. TREATMENT. Case of pronounced elephantiasis of lower extremities in which two intravenous injections of 0.6 Gm. of salvarsan caused disappearance of filariæ from blood and great reduction in size of limbs, weight falling from 400 to 244 lbs. *Barnes.* 1

Fracture of Forearm. TREATMENT. To correct overriding of fragments, attach to hand, anteriorly and posteriorly, as separate straps, zinc oxide adhesive plasters 2½ inches in width, reading from above wrist to 6 inches beyond extended fingers, and fixed above wrist and about knuckles with encircling strips. Apply usual splint dressing and also a plaster-of-Paris encasing bandage, including hand and lower arm. When this firm, include beneath enveloped forearm, by more turns of plaster bandage, a light, flat wooden splint projecting 1 or 2 inches beyond extended fingers. To a cross-piece at end of this, projecting an inch, attach the double adhesive strap from hand with tacks, thus keeping bony fragments from overriding. *Miel.* 165

Fracture of Hip, Intracapsular. TREATMENT. Longitudinal traction alone often unsatisfactory in results. Longitudinal combined with lateral traction, however, or wide abduction in plaster of Paris, usually gives serviceable limb. Former far easier to apply and the more suitable the older the patient. Plaster-cast method requires much skill in application, and is better adapted to young patients. *Davis.* 41

Gangrene. TREATMENT. Alternate hot (95° F., gradually raised to 131° F.) and

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cold (room temperature) baths up to knee used with success in a case of sclerotic gangrene of leg. Pain relieved and normal color regained. Alternate immersions practised 30 to 50 times, morning and evening, for over a year. *Borchardt.* Page 348

Alternate lowering and raising of leg to horizontal position yields an effect similar to that of hot and cold baths in leg gangrene. *Moszkowicz and Frank.* 348

Gastric Ulcer. TREATMENT. Best preparation of bismuth to use is the subnitrate precipitated from a boiling-hot mixture. Cleanse stomach in morning with 150 c.c. (5 ounces) of Carlsbad or Vichy water, and three-quarter to one hour later give 10 to 20 Gm. (2½ to 5 drams) of bismuth subnitrate suspended in tumblerful of warm water. Administer daily, and increase or reduce dose, or discontinue, more or less rapidly, according to clinical course (Fleiner). Another method is to give same doses of bismuth finely suspended in oil, several times daily. Stepp recommends following bismuth suspension: Bismuthi subnitratis, gr. xlv (3 Gm.); chloroformi, ♏xv (1 c.c.); aquæ destillatæ, 5 fluidounces (150 c.c.); 1 to 2 tablespoonfuls to be taken hourly for several weeks. *Aaron.* 42

1. Absolute rest in bed. 2. No food for five to seven days. 3. Morphine hypodermically, until hemorrhage has ceased. 4. Ice-pack on abdomen, or hot applications in absense of hemorrhage. 5. Move bowels by enema, if necessary; where no hemorrhage, give citrate of magnesia or Carlsbad salts. 6. Bismuth subnitrate in 30-grain (2 Gm.) doses, with magnesium hydrogen dioxide (25 per cent.) in 7½-grain (0.5 Gm.) doses three times daily. Give boiled water if necessary to insure retention of these drugs. 7. Rectal alimentation, giving 500 c.c. (1 pint) of 10 per cent. dextrose solution at body temperature every six hours, by Murphy drop method. 8. Return to mouth feeding as soon as possible, according patient's condition, beginning with small doses of albumin water several times daily. *Gompertz.* 139

Injections of atropine recommended to quiet pain and diminish pyloric spasm; especially of service in acute cases. Injection of ¼ mgm. ($\frac{1}{256}$ grain) to be given three times the first day, then 1 mgm. ($\frac{1}{64}$ grain) given in 2 doses the second day, then 1½ mgm. ($\frac{1}{42}$ grain) divided in 3 doses daily for ten to twelve days. *Mathieu and Giraud.* 414

Principle of isolating, but not closing a perforated gastric ulcer followed in 15 cases. All did well, and none ever needed a primary or secondary gastroventerostomy. Perforation was isolated by a gauze tampon and a gauze drain placed next the ulcer and brought out of the wound. The drain was removed in thirty-six hours under N_2O anesthesia. A cigarette drain may be used. This plan should be employed whenever attempt to close perforation by suture fails or the result is doubtful. *Corner.* 414

Gastrointestinal Disturbance, Infantile. TREATMENT. Where constipation present, with retention of toxic food derivatives and symptoms such as high fever, tympanites, stupor, etc., give a 2-grain (0.12 Gm.) dose of calomel in candy form, followed in an hour or two by large dose of castor oil with ¼ its volume of equal parts of aromatic syrup of rhubarb and port wine. Keep child quiet on back. If doubt whether cathartic can work in time, give hot colon flushes to start intestinal action, or in obstinate cases, following enema: Epsom salt, glycerin, of each, 8 ounces; turpentine, 1 dram, and water, to 2 quarts, given at 110° F.

Subsequent treatment: Diet of toast water or good beef broth alone until temperature nearly normal. Calomel, 1 grain divided, followed by the castor-oil compound, every day and later on alternate days till stools normal. After this, equal parts of aromatic fluidextract of cascara sagrada and glycerin. *Freeburg.* 292

Gout. TREATMENT. Atophan used in 48 cases — acute, neuritic, and chronic — with greater relief than had been obtained from other remedies, except in the chronic cases, in which effects were slight. Gouty sore throat and coryza also generally benefited. Dose, 30 to 60 grains (2 to 4 Gm.) a day, in 7½-grain (0.5 Gm.) tablets, 1 or, in severe cases, 2 after each meal and at bedtime, or every two or three hours. *Kahlo.* 350

Headache. TREATMENT. Migraine and other forms of severe headache relieved by causing copious flow of nasal secretions, thus removing congestion of dura and pia. Formulæ used: I. Mentholis, gr. viiss (0.5 Gm.); acidi borici, gr. xv (1 Gm.); iridis florentinæ, saccari lactis, of each, 3ss (2 Gm.). II. Pulveris mayoranæ, iridis florentinæ, of each, gr. xv (1 Gm.); sacchari lactis, 3ss (2 Gm.); veratri (albi), gr. ii¼ (0.14 Gm.). *Lorand.* 237

Treatment of "indurative" variety considered. 1. Saline purge. 2. Rest in bed. 3. Affected muscles to be kept at rest. 4. Free diaphoresis at outset of attack. 5. Hot fomentations or bags *loco dolenti* for several hours. 6. Salicylates in full doses often effective in acute cases. 7. Colchicum and alkalies, if patient gouty. 8. Applications of chloral, menthol, and camphor rubbed together, locally. 9. Massage. 10. Vibration, except where arteriosclerosis. 11. Rhythmically reversed electric current. 12. In chronic cases with marked fibrosis: Potassium iodide and general tonics, or ionization with 2 per cent. sodium salicylate or lithium iodide solution. *Beling.* 291

Hemoptysis. TREATMENT. Subcutaneous injection of 40 c.c. of sterile gelatin solution recommended. Causes in twenty-four hours rise in viscosity of blood by 1.4 of original value. *Cmunt.* 110

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To prevent onset of hemoptysis where sense of tightness in chest or sputum blood-streaked: 1. Absolute rest. 2. Nitroglycerin solution, ♏xv (1 c.c.), or sodium nitrite, gr. xv (1 Gm.), in ℥ij (60 c.c.) of water; ℥j (4 c.c.) every four hours for two or three days.—Where actual hemorrhage: 1. Put to bed in comfortable position. 2. Reassure patient. 3. Amyl nitrite inhalation. 4. Atropine, gr. 1/50 (0.0012 Gm.) hypodermically, to be repeated 2 or 3 times in next twenty-four hours. 5. Or, nitroglycerin, gr. 1/100 (0.0006 Gm.) hypodermically, at first every half-hour for 3 or 4 doses, later less often; followed by sodium nitrite, gr. j (0.06 Gm.) every three or four hours. 6. Where excessive nervous irritability, or cough troublesome: Morphine. 7. In abundant hemorrhages: Apply bandages to middle of arms and thighs. 8. Epinephrin hydrochloride, 5 drops of 1: 1000 solution, or suprarenal substance, 3 grains (0.18 Gm.), every three or four hours; or pituitary extract, injected subcutaneously. *Frazer.* Page 111

Hemorrhage. TREATMENT. In operations where bleeding from bone troublesome, cut a fragment of muscle from any convenient place in operative field and apply to bleeding bony surface or edge. Rub in if it will not adhere at first. Always efficient in arresting the bleeding. *Vaughan.* 290

Thermocautery employed with success in 2 cases of hemophilia to arrest hemorrhage that had proven rebellious to pressure, epinephrin, gelatin, etc. *Hahn.* 416

Hemorrhage, Gastrointestinal. TREATMENT. Where only occult blood: Rest in bed, on diet of 3 or 4 liters (quarts) of milk, with Carlsbad water, until no blood detected for three or four days. Where liver or spleen enlarged and Wassermann positive: Specific treatment. For severe hemorrhage from any cause: (1) Diet limited to cold tea, ice-cold milk or egg-white jelly, taken regularly in very small amounts. (2) Saline enteroclysis by drop method, 1 liter each day, with 15 drops of 1: 1000 epinephrin solution added. (3) Ice-bag. (4) Gelatin in severe cases. (5) Rectal injections of calcium chloride. (6) Gastric lavage with ice-water, where clots palpable in stomach. *Boas.* 351

Hemorrhoids. TREATMENT. Olive oil a good demulcent laxative in hemorrhoids and anal fissure. *Bram.* 47

Where not much inflammation or hemorrhage, following ointment advisable: Cerati, olei amygdalæ expressi, zinci oxidi, of each ℥iiss (10 Gm.); balsami Peruviani, gtt. iij. Piece of this of size of hazelnut to be introduced high up through anus morning and evening, and especially before stool. Where much hemorrhage, following may be used: Chrysarobini, gr. xij (0.8 Gm.); iodoformi, gr. v (0.3 Gm.); extracti belladonnæ fol., gr. x (0.6 Gm.); petrolati, ℥j (30 Gm.). Hot water or antipyrin in powder or 2 per cent. solution equally effective and less irritating. Where intense itching: Aluminis, gr. xv (1 Gm.); camphoræ, gr. xij (0.75 Gm.); adipis benzoinati, ℥j (30 Gm.). Where much moisture and also itching, 10 per cent. bismuth subsalicylate powder useful. If much congestion, use: Bismuthi subsalicylatis, zinci oxidi, of each gr. lxxv (5 Gm.); talci, ℥iij (90 Gm.). In voluminous, readily prolapsing or bleeding hemorrhoids, an injection of olive oil should be taken every evening before retiring. *Plicque.* 166

Rectal injections of pure crystallized calcium chloride strongly recommended for hemorrhage due to hemorrhoids. *Boas.* 351

Injection method used in about 450 cases with good results. Solution employed: Phenolis, 3j (4 Gm.); glycerini, q.s.; aquæ, q.s. ad 3x (40 c.c.). Phenol and water to be first mixed, then glycerin added drop by drop, stirring. About 50 per cent. of all cases could be safely treated and cured by injections. Clamp and cautery to be preferred, however, where patient not opposed to operation and there is no contraindication. Cases especially suited for injection method: (1) the markedly anemic; (2) tuberculous subjects; (3) where organic disease contraindicates anesthesia, particularly if subjects highly nervous; (4) bleeders. Not over 10 minims of the 10 per cent. phenol solution to be used at one sitting. No superficial necrosis, abscesses or thrombosis in author's cases. *Humphreys.* 351

Hernia. TREATMENT. Use of a mixture of 3 parts of hyoscine and 2 of atropine advised to facilitate reduction of incarcerated hernia. Inject 1/1000 grain (0.00006 Gm.) every five to twenty minutes until desired effect obtained. Full dose for adult males is 1/100 grain (0.0006 Gm.). *Waugh.* 167

Filigree implantation practised in 146 cases—106 inguinal and 40 umbilical or ventral. Eleven cases were over 60 years of age. In all there were but two recurrences. *McGavin.* 417

Hyperchlorhydria. TREATMENT. Where patient constipated at beginning of treatment, give suspension of magnesia and bismuth just after and again one and a half hours after meals; each dose to represent 6 grains (0.4 Gm.) of magnesium hydroxide and 22 grains (1.5 Gm.) of bismuth subnitrate. Continue for three to five days, and, if evacuations still too frequent, use instead a powder containing equal *volumes* of magnesium oxide and magnesium carbonate, with a little powdered charcoal and sometimes bismuth. Less magnesium oxide should always be prescribed than is capable of neutralizing completely all the acid present. *Tupper.* 167

On a diet as nearly salt-free as possible without special preparation of foods before they reach the cook, hyperchlorhydria almost invariably abates. *Benedict* 354

Ileocolitis, Infantile. TREATMENT. In "putrefactive diarrhea" of infants, all irritat-

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ing found should be avoided as, by causing increased mucous flow, it favors bacterial pullulation. Use of proteid of cows' milk, obtained by removing whey from skimmed milk with chymogen or pepsin, advisable. Break up curd into fine particles and suspend in 5 per cent. gelatin water, to be heated before administration. After four or five days to a week replace gelatin water partly by buttermilk, and skimmed-milk curds by whole-milk curds, gradually getting child on albumin-milk and finally on whole-milk mixture. *Grulee.* Page 168

Impetigo Contagiosa. TREATMENT. Remove all crusts, wash raw surfaces with bichloride solution, make a fresh paste by adding a few drops of mercury bichloride and ammonium chloride solution (1:2000) to small quantity of zinc oxide, and apply to irritated places twice daily. *Hiden.* 182

Infections, Pyogenic. TREATMENT. Dilute sulphuric acid in 20- or 30- minim (1.25-2.0 c.c.) doses, diluted with 2 oz. (60 c.c.) of water, every four hours, found very useful in treatment of carbuncles, boils, and other local pyogenic infections. Rapid circumscription and granulation of affected area follows. Dressing of 1:20 carbolized petrolatum used externally. Same measure found useful in early sepsis, inflamed lymphatics, blind boils, recurrent pimples and acne. In bronchiectasis and phthisis sputum becomes less purulent and less in amount. *Reynolds and Reynolds.* 284

Influenza. TREATMENT. Care to secure proper ventilation, alimentation, and elimination necessary. Local treatment of air passages important, to destroy causative bacillus. In the morning: 1. Cleanse nose and throat with spray of Dobell's solution or 1:400 phenol solution at 85° to 90° F. 2. Swab with: Balsam of Peru, gr. x (0.6 Gm.); ichthyol, gr. v (0.3 Gm.); glycerin, q. s. ad f℥ij (60 c.c.). In the evening: 1. Repeat spray. 2. Have patient inhale for one-half hour creosote, 8 c.c. to quart of water. 3. Swab nose and throat with epinephrin solution. 4. Fifteen minutes later swab with argyrol, 10 per cent. Hydrotherapy of value in chronic cases. In severe chronic cases, sojourn in an even and sunshiny, but not tropical or subtropical, climate desirable. *Jones.* 111

Inversion of Uterus. TREATMENT. To arrest hemorrhage, place elastic band around base of uterus in vagina just tightly enough to check flow of blood, but no more; take off band when bleeding stopped. Where inversion incomplete, tampon vagina, and perhaps also suture vulva together. Reduction of uterus not to be attempted until shock recovered from; otherwise, mortality considerable and reduction frequently fails. Reduction to be done under general anesthesia, with pelvis elevated. Operator to exert pressure near orifice of one tube with tips of fingers, using rest of hand for counter-pressure. *Zangemeister.* 354

Iritis. TREATMENT. Sinus infection considered responsible for many cases of intraocular inflammation. Following treatment used with good results in 26 cases of iritis and 5 of idiopathic retinochoroiditis: Saturate tampon, of such size as to fit snugly between middle turbinate and septum and extend from exterior portion of nose to sinus posteriorly, with aqueous argyrol solution (gr. xl-℥j) and introduce. This will drain ethmoid and other sinuses. To drain antrum, place tampons under scroll of middle turbinate and above upper part of inferior turbinate. Allow to remain twenty minutes to one hour. *Manning.* 112

Lead Poisoning. TREATMENT. Obstinate lead colic relieved and constipation overcome by giving a tumblerful of olive oil once daily. *Bram.* 47

Leprosy. TREATMENT. Salvarsan used in 5 cases. Caused clinical improvement, cases showing partial or complete resolution of nodules of tissue examined. Effect is not specific or permanent. *Wellman.* 114

Leukemia. TREATMENT. Benzol (benzene) used in 6 cases of myeloid leukemia and 1 of Hodgkin's disease with good results. Given in capsules each containing 0.5 Gm. (8 minims), with same amount of olive oil; at first, 4 capsules daily, after meals, then 2 capsules 3 times daily, later 4 times, and finally 5 times. Leucocyte count gradually lowered to normal, fever disappears, and general condition improved. Effectual where other measures, including X-rays, have failed. *Kiralyfi.* 114

Benzol in doses of 7 minims (0.5 c.c.), increased to 15 minims (1 c.c.), in capsules, after meals and at bedtime, given in 5 cases—4 myelogenous and 1 lymphoid. Results: Rapid fall in leucocytes, resulting in leucopenia in 3 cases; diminution in size of spleen; improved red cell count and hemoglobin; disappearance of lymph-nodes in lymphoid case; improved general condition. Use of drug should be controlled by frequent blood examinations. *Billings.* 293

Marasmus. TREATMENT. Large series of infants with marasmus, congenital or acquired, and premature infants, treated with marked success by external application of codliver oil. Wrap child in oil-soaked flannel from armpits to iliac crests, and cover with oiled silk. Remove flannel, wash skin with soap and water, and reapply flannel, at twelve-hour intervals. Give only water by mouth, in ample quantity. Treatment causes rise in temperature, loss of dryness and wrinkles of skin, and an increase in weight, often considerable. Feed by mouth only when temperature has been normal for a number of days and skin shows increase in fat and water content. *Gray.* 114

Measles. TREATMENT. Following measures employed in 160 cases: (1) hot bath, followed by (2) application of eucalyptus oil to whole body except hands and part of face

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about mouth, nose, and eyes; (3) mouth irrigated twice daily with weak alum lotion, and glycerin and borax applied to interior of mouth and gums; (4) tonsils and fauces treated with 1: 10 phenol morning and evening, using firm cotton mop on end of forceps; (5) blanket-bath given morning and evening for four successive days, followed by general oil rubbing. Treatment reduced mortality and had favorable influence on course of disease. Careful nursing and maintenance of an even air temperature of 65° F. important accessory measures. *Connolly.* Page 239

Nephritis, Acute. TREATMENT. Saline proctoclysis advised in acute nephritis in children. Tends to relieve edema and subjective symptoms and improve condition of urine. Normal salt solution, kept at about 110° F. by hot-water bottles surrounding graduated container, passed into rectum through soft-rubber catheter, which is inserted about 6 to 8 inches after a cleansing enema. Procedure also useful in acute infectious diseases and toxemic diseases, as well as before and after ether anesthesia. *Lowenburg.* 171

Following treatment advised: 1. Rest in bed until two weeks after red cells and kidney epithelium disappear from urine. 2. Diet: Limit or exclude proteids; give carbohydrates in large amount, especially sugar, fruit juices and fruits rich in sugar, and gruels of finely ground rice, corn, wheat, or potato starch; also give thoroughly washed butter; withhold salt. Milk to be given only after dangerous stage past. Menu then enlarged gradually, adding at first purées, boiled green vegetables, cocoa, yolk of eggs, etc., and only later white of eggs, river fish, and boiled meat. 3. Fluids: Fruit juices, weak tea (Chinese tea, grass seeds, dried strawberries, or raspberries, blackberry leaves, etc.) or simple pure water. 4. Elementary measures: Theobromine preparations; diaphoresis only where edema. Hot, dry climate acts same as sweat baths. Where other methods fail, puncture of skin. In threatening uremia, venesection and, if latter ineffective, decapsulation. *Von Noorden.* 231

Renal decapsulation practised after appearance of anuria in 2 cases of nephritis due to acute mercurial intoxication. Both cases ultimately died, but not from anuria, urinary function having been resumed. *Tisserand.* 295

Nephritis, Chronic. TREATMENT. Following treatment advised: (1) Exercise to be allowed unless hematuria occurs,—avoiding overexertion. (2) Frequent long vacations. (3) Diet: Limit proteids to amount that will maintain bodily strength (80 to 100 Gm., a third at most in the form of meat, *i.e.*, 130 to 160 Gm. of meat weighed raw); preserved meats, except mild ham, to be forbidden; rest of proteids to consist of milk, eggs and vegetable albumins; amount of fat and carbohydrates to depend upon general nutrition, and should cause neither undue gain nor loss of weight. (4) Salt intake to be restricted in so far as it does not interfere with palatability of food; to be prohibited only where edema. (5) Restriction of fluid to 1¼ to 1½ liters a day, except one day weekly, on which amount is raised to 2½ liters. In "secondarily contracted kidney" about 2 liters should be allowed daily. (6) Carefully prescribed gymnastics for the heart. (7) Baths and massage; especially, lukewarm baths followed by cold douches and vigorous rubbing, in alternation with electric or carbon dioxide baths. (8) Diuretin, 7½ grains (0.5 Gm.) three times a day for a month, every third or fourth month. (9) Warm, dry climate, with avoidance of considerable altitudes. *Von Noorden.* 357

Neuritis. TREATMENT. Place long electrodes consisting of absorbent cotton wrapped in gauze, parallel in pairs along limbs or spinal column. Current to be transmitted through metallic bands of suitable length. Intensity of current 60 to 80 milliampères for an arm and 100 to 125 for a lower limb. Sitting to last three-quarters to one hour, and be frequently repeated. Method used in nearly 600 cases, with excellent results. Traumatic myelitis benefited. *Hirtz.* 420

Nevi. TREATMENT. Use of radium advised. Skin should first be broken over lesion, even if only by lightest electrolysis, to permit of rapid action and therefore small dosage of radium salt. Eradication without scarring. *De Courmelles.* 172

Ophthalmia, Gonorrheal. TREATMENT. Stock gonococcic vaccines used in 9 cases, causing prompt reduction of swelling and protecting deeper corneal and conjunctival tissues from invasion. Initial dose for babies, 50 millions; subsequently 100 millions. For adults, double these doses. Local cleanliness and antisepsis to be simultaneously maintained. *Mittendorf.* 349

Otitis Media. TREATMENT. Where discharge copious, syringe ear gently but thoroughly 2 or 3 times daily with saturated boric acid solution, or, better, mercury bichloride solution, 1: 8000, sometimes later 1: 4000. Where discharge scanty, first cleanse ear with cotton mop, or if acute stage of attack passed drive out discharge by Valsalva method or Politzer bag and wipe out again. Then have patient incline head and pour in bichloride solution, allow to remain ten minutes, dry ear, not very thoroughly, and plug meatus with absorbent cotton. Do this not oftener than once daily. Exceptionally, especially where there is extensive destruction of drumhead, insufflation of boric acid, or of boric acid and aristol or zinc oxide, equal parts, proves more efficacious than the mercury solution. *Theobald.* 116

In long-standing cases of chronic catarrhal otitis media that have resisted usual measures, cocainize parts, insert fine catheter into middle ear, and with syringe inject through

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it 5 to 10 minims of 10 per cent. argyrol solution. Causes inflammatory reaction and pain for forty-eight hours, but hearing is markedly improved. *Hays.* Page 296

Following measures advised in chronic otitis media: 1. Restricted diet, mainly of vegetables, fruit and buttermilk; prohibition of red meats and pastries. 2. Calomel, 5 or 10 grains, followed in six or eight hours by 1 ounce of castor oil, and this, in three or four hours, by ½ oz. of magnesium sulphate and 1 dram of sodium bicarbonate in 6 ozs. of carbonated water. Magnesium sulphate, 1 dram, daily before breakfast for from two to four weeks. 3. Sodium or strontium iodide, 1 to 5 grains; sodium or strontium salicylate, 5 to 10 grains, and tincture of nux vomica, well diluted, 3 times daily after meals. 4. Removal of nasopharyngeal and faucial abnormalities. 5. Alkaline wash used with nasal cup two or three times daily to keep nasopharynx clean. 6. Vibratory massage over subglenoid fossa, with gentle inflation of middle ear with vapor of chloroform, iodine or menthol, two or three times a week. 7. Where membrane relaxed and flabby: Paint posterior inferior quadrant with tincture of iodine (25 per cent.) once or twice a week, or with flexible collodion. 8. Small doses of thyroid extract. 9. Thiosinamine in cases with well-defined adhesions. *Stucky.* 297

Pancreatitis, Subacute. TREATMENT. 1. Rest. 2. Limitation of diet. 3. After acute attack of pain has passed off, cholecystostomy. *Archibald and Mullally.* 360

Paralysis, General. TREATMENT. Hexamethylenamine, gr. x (0.6 Gm.) thrice daily, found effectual in preventing retention of urine and avoiding necessity for catheterization. *Baird.* 242

Pediculosis Capitis. TREATMENT. Lay patient on back on bed with head over edge, hair lying in a basin beneath head on a chair. Pour 1:40 phenol solution over hair into basin and sluice backward and forward until hair thoroughly soaked, especially over ears and at nape of neck. Continue sluicing ten minutes, then lift hair from basin and allow to drain, without drying it. Then swathe head with thick towel or large piece of flannel and allow to remain for an hour. Finally wash hair or simply allow to dry. Method entirely safe with children of 5 years and over. Hair not damaged. *Whitfield.* 173

Pellagra. TREATMENT. Gelsemium followed by much improvement in 5 cases. Fluidextract, 3 or 4 drops every four hours, given. Discontinue drug if ptosis or diplopia occurs. *Blosser.* 174

Pelvic Inflammation, Chronic. TREATMENT. Following procedure of massage used with good results in chronic perimetritis with adhesions, chronic parametritis, shortening of uterosacral ligaments with uterine retrodisplacement, and old pelvic exudates: steady and slightly lift up cervix with index and middle fingers of left hand, and with right hand, by rotary movements, massage uterus through abdominal wall, slowly, and only 10 to 15 times at the first treatment. If no unusual pain or soreness follows, repeat three times weekly until symptoms relieved. Where uterus retroverted, place inside fingers against anterior portion of cervix and push posteriorly, at same time bringing uterus forward with outside hand. *McMorrow.* 421

Pemphigus. TREATMENT. Case of refractory pemphigus in which intravenous injection of blood from patient's husband, without previous defibrination, was followed by complete recovery. *Practorius.* 422

Placenta Prævia. TREATMENT. Pituitrin used with good results in 16 cases. If only a small portion of placenta presents, and especially if vertex presents and cervix is sufficiently dilated, membranes should be ruptured and pituitrin given. In other cases employ combined version with pituitrin, and await spontaneous delivery, merely extracting arms and head. Where dilatation insufficient for combined version, insert small dilating bag or vaginal tampon, and later do version and give pituitrin. *Trapl.* 423

Pleurisy. TREATMENT. Autoserotherapy advised in all cases of pleural effusion where fluid not purulent. Upon exploratory puncture, do not withdraw needle entirely, but inject 2 to 5 c.c. of the fluid when its point is in subcutaneous tissue. In favorable cases, general amelioration in two or three days; in about 80 per cent. of cases fluid will disappear in a week or ten days. In some patients treatment may have to be repeated several times every two or three days before benefit appears. *Fishberg.* 425

Pneumonia, Lobar. TREATMENT. Sodium citrate internally found in most cases, especially in children, to cause fall in temperature, pulse, and respiration to normal within twenty-four hours; process in lung clears up soon after, third stage being apparently escaped. Administered in doses of 30 to 40 grains (2 to 2.6 Gm.) in adults every two hours, with a little citric acid or in lemonade. Dose for children to be calculated from 40-grain dose in adults. Drug to be continued till clearing up of process in lung complete. Active catharsis to be established at beginning of treatment. Sodium chloride should be supplied to system in about the normal daily amount (240 grains, or 16 Gm.), with the diet or otherwise. *Weaver.* 116

Administration of calcium chloride in 10-grain (0.6 Gm.) doses every four hours advised, from outset until three days after defervescence. Patients given it seem to do better than others. *Cornwall.* 175

Creosote carbonate observed to lower temperature considerably and diminish somnolence or delirium in pneumonic processes in children. Dosage, 5 drops (0.5 Gm.) three

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times daily for each year of age in first 3 years; in fifth and sixth years, 20 drops (2 Gm.) and in seventh to tenth years, 25 to 30 drops (2.5 to 3 Gm.). Administered readily in a spoonful of warm milk. To be continued in ½ doses for a week after auscultatory signs have disappeared. *Hunäns.* Page 162

Use of a 20 per cent. solution of camphor in olive oil previously washed with alcohol recommended in both lobar and bronchopneumonia. Mortality seemed lowered by post-trochanteric injections of this. Dose in cases of intermediate severity, 10 c.c. (2½ drams); in grave forms 15 and even 20 c.c. (3¾ and 5 drams), ½ the amount being injected morning and evening. In children 1 c.c. (16 minims) for each year of age is given. *Certain.* 299

Following mercury and sulphur combination advised in both lobar and lobular pneumonia: Hydrargyri chloridi corrosivi, gr. ss (0.03 Gm.); sulphuris præcipitati, ʒij (8 Gm.); aquæ destillatæ bullientis, fʒiv (120 Gm.). This is to be shaken and then quickly given in the dose of 1 teaspoonful every two or three hours for two or three days. If, when the thirty-second dose is reached, catharsis has not occurred, ½ ounce (15 c.c.) of castor oil is given. Cessation of fever and loosening of cough promptly follow these measures; lung infection is apparently cut short. After evening temperature is normal, the mercury-sulphur mixture is continued for several days longer at four- to six- hour intervals. *Kolipinski.* 402

Poisoning by Illuminating Gas. TREATMENT. I. First stage, preceding loss of consciousness: 1. Fresh air. 2. Aromatic spirit of ammonia. 3. Effervescent sodium phosphate, to produce eructations and relieve nausea. 4. Oxygen inhalation. 5. Analgesics for headache. 6. Avoidance of violent exertion.—II. Second stage, patient unconscious, but breathing: 1. Howard artificial respiration, rhythmic compression of lower thorax, to assist breathing. 2. Oxygen, preferably under pressure. 3. Camphor, caffeine, digitalis, and strychnine hypodermically. 4. External heat, if indicated. 5. Massage of muscles after aërating lungs. 6. Treatment to be conducted in warm room. 7. If not prompt recovery, venesection and normal saline infusion, or use of "pulmotor."—III. Third stage, patient unconscious and not breathing: 1. Same measures as in preceding stage. 2. Blood transfusion. 3. Artificial respiration by Schäfer method, patient prone. *McCombs.* 44

Prurigo. TREATMENT. 1. Good hygiene. 2. Generous diet. 3. Codliver oil. 4. To control itching: Baths with starch, sulphurated potash, or creolin; tar, pure or mixed with olive or codliver oil; codliver oil ointment, with betanaphthol or phenol added. 5. To dissipate any coexisting eruption: Sulphur, in soap, solution of potassium sulphide, or thermal waters; codliver oil, covered with bandage and impermeable varnish; codliver oil, 3 parts, and white wax, 1, used as pomade, with or without covering; alternate injections of phenol and pilocarpine; X-rays; thyroidin. 6. In rebellious and severe cases: Soap patient in warm bath and apply a tar preparation or Vleminckx's solution. 7. In stage of lichenification: Radium. *Morris.* 50

Psoriasis. TREATMENT. Potassium permanganate, 2 tablespoonfuls of a saturated solution added to a warm bath, recommended for acute universal psoriasis. After soaking in this for ten or fifteen minutes, patient to dry himself thoroughly and apply following lotion: Amyli, talci, of each, 40 parts; glycerini, 20 parts; acaciæ, 1 part; liq. plumbi subacetatis, 4 parts; liq. picis carbonis, 26.5 parts; aquæ, 200 parts. Tar baths, preparing by adding 1 or 2 glasses (ʒviij or xvj) of an emulsion of coaltar, also excellent, though a tar salve, rubbed in after a bath, is often better. Following paste found efficient in some obstinate old patches: Acidi salicylici, 10 parts; chrysarobini, olei rusci, of each, 20 parts; saponis viridis, adipis lanæ hydrosi, of each, 25 parts. Cover with oiled silk. A lotion of 1 part of lead subacetate solution to 5 of liquor picis carbonis, diluted 3j-Oj, may be used to envelop the part, covered with oil-silk, and allowed to remain all night. *Montgomery.* 175

Pyelonephritis in Pregnancy. TREATMENT. 1. Rest in bed. 2. Elevation of affected kidney. 3. Morphine or codeine for pain. 4. Early catharsis by calomel and salines. 5. Ice-cap to loin. 6. Cream of tartar water internally. 7. Diet: Milk, skimmed if much digestive disturbance, or lactone buttermilk. 8. Hexamethylenamine, gr. v-x (0.3-0.6 Gm.) with lithium or potassium citrate, gr. x, at three- or four- hour intervals. 9. Replace last after forty-eight hours by sodium benzoate, gr. x every two hours, until patient complains of burning in kidney region, when first combination should be resumed. 10. Potassium iodide or phenyl salicylate might also be used. 11. Argyrol (25 per cent.), 3j (4 c.c.), instilled into pelvis in cases persisting more than ten days. 12. In colon bacillus infections, autogenous vaccines, 30 to 50 million once a week, have been successful. 13. Induction of labor, in persistent cases late in pregnancy. 14. Nephrotomy and drainage where definite signs of surgical kidney present. *O'Connor.* 240

Quinsy. TREATMENT. To relieve dysphagia, place on tongue 0.3 to 0.4 Gm. (5 to 6½ grains) of dry orthoform or anesthesin powder. A few movements of deglutition, without previous admixture of saliva with the powder, will bring it in contact with affected parts. Measure also useful after operation on tonsils. *Hinsberg.* 418

Renal Inflammation. DIAGNOSIS. With patient sitting erect, but relaxed, lightly palpate lumbar muscles. If one kidney is seat

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of an inflammatory process, muscles on that side will feel firmer than normally. *Pottenger.* Page 418

Rhus Dermatitis. TREATMENT. 1. To prevent further penetration of poison: Soap and hot water bath of whole body; discard all clothing exposed to the poison. 2. To relieve itching, water as hot as can be borne. 3. Curative remedies: Ichthyol collodion, 5 per cent., painted on lesions three times daily. Magnesium sulphate in saturated solution, applied on gauze, covered with rubber tissue and bandage. Iodine tincture, diluted with 9 parts of water. Hot 2 per cent. (or weaker) potassium permanganate solution; remove stain with 1 per cent. oxalic acid solution. 4. Where pustules have formed: Hot mercuric chloride solution. *Von Adelung.* 300

Scalp Wounds. TREATMENT. Shave scalp for some distance around wound, either dry or wet with alcohol; after area dried, paint with tincture of iodine and wash off surplus with alcohol. In suturing use figure 8 sutures, not too tight. Where parts badly torn, provide free drainage; stitches not to be too close together. In all fractures of skull give 40 to 60 grains (2.6 to 4 Gm.) of hexamethylenamine daily. *Harper.* 119

Scarlet Fever. TREATMENT. Salvarsan used in 109 cases. Striking effect on throat symptoms, especially in necrosing form, noted. Indicated in severe toxic forms especially. Good results even upon local application. Neosalvarsan not suitable. *Jochmann and Schreiber.* 364

Sciatica. TREATMENT. Good results from X-ray treatment in 11 out of 13 cases. Rays directed usually over lumbar region, sometimes over nerve itself. Small doses only. In cases resisting ordinary medical treatment and galvanic current, radiotherapy should always be tried, especially when sciatica due to compression of nerve-roots. *Delherm.* 365

Septicemia. TREATMENT. Fixation abscess advised, consisting in injection of 15 mimins (1 c.c.) of spirit of turpentine in cellular tissue of thigh, loin, or deltoid region. *Carles.* 413

Sinus Suppuration, Acute. TREATMENT. Apply 4 per cent. cocaine solution on cotton applicator, passed between end of middle turbinate and nasal wall. Follow by a cleansing alkaline solution and an oily spray containing menthol. To reduce pain and promote drainage: Hot, moist applications over whole face. Salicylic preparations, acetphenetidin, and quinine, to be used as indicated. Free catharsis. Irrigation of frontal or maxillary sinuses unnecessary unless there is trouble in antrum traceable to carious tooth. Vacuum treatment by negative air-pressure often useful. *Lemere.* 176

Syphilis. TREATMENT. Following plan advised: Intravenous salvarsan injection, immediately followed by series (12 to 15) of intramuscular mercury salicylate injections, and later by 4 to 6 intramuscular injections of small doses (0.1 to 0.2 Gm.) of salvarsan in sesame oil. After this start new series of mercury salicylate injections, to be continued at increasing intervals during first year of disease. A number of the cases thus treated appeared to be cured. *Eisenstaedt.* 53

Immediate tolerance to neosalvarsan is greater than to salvarsan, but this does not warrant use of relatively larger doses of former. Neosalvarsan to be preferred to salvarsan where latter badly borne and in cases of tabes, paresis, arteriosclerosis, cardiac disease, *i.e.*, in all patients in whom too marked a reaction is to be avoided and where only small doses are indicated. *Bayet.* 115

Salvarsan given intravenously in doses of 0.2 to 0.4 Gm., four to six times at weekly intervals, in 14 pregnant syphilitic women. Each gave birth at term to a living child, generally of normal weight, and none showing stigmata of the disease. *Jeanselme.* 299

Tabes Dorsalis. DIAGNOSIS. Spontaneous fractures not infrequently an initial or early symptom of tabes. *Taylor.* 54

Talipes Equinovarus. TREATMENT. Immediately after birth place strip of zinc oxide adhesive plaster over sole and inner aspect of foot, over correct position of latter, and draw plaster tightly along outer aspect of leg. Place second strip over sole just posterior to base of metatarsals, extending over inner aspect of foot and ending over joint of great toe. Draw firmly, apply to outer side of leg 1 to 2½ inches above external malleolus, and wrap around leg in ascending spiral. Place further strips to cover and tighten the second tension strip, beginning on leg 2 inches above ankle and overlapping until instep reached. Renew dressing, after cleansing foot with ether and alcohol, ten days or two weeks later. Deformity will be corrected in 6 or 8 weeks. Leave foot with stiff-ankle infant-shoe, with 1 strip of adhesive on outer side of foot and leg. *Allen.* 178

Tapeworm. TREATMENT. Thymol in cachets of 0.25 Gm. (4 grains) to be given in the morning on an empty stomach for eight days. Worm usually expelled on third or fourth day. Twenty-three cases treated with success. All alcohol to be stopped during treatment. *Artault.* 366

Tetany. PROPHYLAXIS. In pregnant and puerperal patients and after gynecologic operations, when Chvostek's sign positive and symptoms such as paresthesia of hands, itching, pains in fingers in sewing or writing, and muscular weakness or stiffness present, give calcium chloride in following form: Calcii chloridi (puriss.), ʒv (20 Gm.); syrupi menthæ piperitæ (vel syrupi rubi idæi), ʒij (60 Gm.); aquæ destillatæ, ʒx (300 Gm.). Dose of calcium chloride to be carried as high as 75 to 90 grains (5 to 6

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Gm.) a day in adults and, in newborn infants, to 15 grains (1 Gm.). *Kehrer.* Page 365

Tonsillitis. TREATMENT. Following measures used in severe follicular tonsillitis and streptococcic sore throat: 1. Mixed streptococci vaccine subcutaneously. 2. Silver nitrate solution, gr. lxxx-f3j, applied to tonsils once or twice daily. 3. Mild antiseptic gargle, used every two hours or oftener. 4. Calomel in fractional doses, until free catharsis occurs. 5. Ice-bags, as needed. 6. Salicylates and Dover's powder, to reduce temperature and quiet pain. 7. Plenty of fluids—water, milk, lemonade. 8. Acetylsalicylic acid, locally and internally. *Goldstein.* 405

Toxemia of Pregnancy. TREATMENT. Free administration of oxygen seemed useful in a number of cases, some severe. May be given either by inhalation or subcutaneously. *Shears.* 242

Tuberculosis, Articular. TREATMENT. Thyroid substance indicated in sluggish cases, especially if evidences of thyroid inactivity present. Dose should be only 1/6 to 1/2 grain (0.01 to 0.03 Gm.) *pro die,* and patient watched for tachycardia. *Lereboullet.* 179

Tuberculosis, Laryngeal. TREATMENT. Submucous cauterization found to heal 70 to 85 per cent. of cases. Performed with electric cautery. Easier than curettage, and there is no bleeding. Not suited, however, for superficial ulcers on posterior wall, particularly those on the cords, which do better on the old method of lactic acid applications. *Pettit.* 237

To relieve dysphagia, place on tongue 0.3 to 0.4 Gm. (5 to 6½ grains) of dry orthoform or anesthesin powder. A few movements of deglutition, without previous admixture of saliva with the powder, cause it to descend into contact with diseased areas covering entrance to larynx, and in a few minutes patient can swallow without distress. Measure can be repeated three or four times daily for several weeks. *Hinsberg.* 418

Tuberculosis, Pulmonary. DIAGNOSIS. Value of percussion in earliest stage emphasized. With patient lying on back on couch, employ light percussion on terminal phalanx of a finger firmly pressed on spot under examination. Three characteristic dull areas on either side should be sought, which may all be present and of considerable size while apex is still very fairly resonant: 1. Opposite inner part of first intercostal space (percussing anteriorly) and inner part of suprascapular fossa (posteriorly). 2. Opposite outer part of same interspace, and outer part of suprascapular fossa. 3. In upper part of lower lobe, percussing posteriorly at end of spine of scapula, and anteriorly in second interspace. *Lees.* 54

Quantitative examination of albumin in sputum easily made and useful in diagnosis in doubtful cases. Technique as follows: To 20 c.c. of sputum as free from saliva as possible add a 3 per cent. acetic acid solution slowly, while agitating, until mucin is coagulated; add 2 parts of distilled water to sputum, shake well, filter through several layers of gauze, add a few drops of acetic acid solution, filter, and test filtrate for albumin by any ordinary test. If more than a trace present make quantitative test with Esbach's tube and multiply reading by 3 to get percentage. All active cases give positive reaction. *Works.* 117

TREATMENT. 1. Inhalation of following solution: Creosoti, phenolis, spiritus chloroformi, ana 3ij (8 c.c.); tincturæ iodi, spiritus ætheris, ana 3j (4 c.c.). Two Yeo inhalers to be used on alternate days, cleansed by immersion in boiling water and careful drying. Patient to pour 6 to 8 drops of solution on felt of inhaler *every hour* during daytime, and once or twice during night if awake. Petrolatum or lanolin cold cream to be smeared over nostrils and upper lip before use of inhaler at first. 2. Period of rest in bed at beginning of treatment. 3. Treat digestive disturbances. 4. Give a sufficiency of easily digested food; malted milk, dissolved in scalded whole milk, after each meal. 5. Careful disinfection of mouth 4 times daily, after the milk; antiseptic sprays for unhealthy conditions of fauces. Forty-eight complete recoveries in 70 cases thus treated. *Lees.* 54

Hydrotherapeutic measures, to be employed in 4 successive stages or steps, described: I. Ablution, beginning with water at 90° F., gradually reduced, by 2° daily until 60° F. reached; followed by drying and, if possible, exercise in open air. II. Affusion. With patient standing in water at 105° F., water at 85°, gradually reduced to 60°, is thrown over back and chest. III. Cold rub. With patient standing in water at 105°, a sheet is wrung out in water at 80°, gradually reduced to 50°, and actively rubbed till sheet warm. IV. Drip sheet. Same as last, with sheet dripping; patient rubbed and slapped for two minutes; water at 70° then poured over shoulders, and friction applied till sheet warm; same procedure rapidly repeated over other parts of body. *Baruch.* 56

Olive oil, ½ ounce (15 c.c.) two hours after each meal, increased weekly by ½ ounce up to 3 ounces, found to cause considerable gain in weight. *Bram.* 47

Sodium cinnamate subcutaneous injections found superior to cacodylates in all varieties of cases in which a general tonic effect required. Initial dose, contents of 5 c.c. (1¼ drain) ampoule, including 0.5 Gm. (5/6 grain) of the cinnamate; this to be rapidly increased by one-half, bulk of solution, however, being kept the same. Injections given daily. *Laborde.* 118

Counterirritation with mustard sometimes found very effective in night-cough. Soft capsules containing beechwood creosote, 1

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minim (0.06 c.c.), oil of sandalwood, 5 minim (0.06 c.c.); oil of sandalwood, 5 grains (0.12 Gm.), given 4 or 5 times daily, may be of decided benefit for cough. *Gordon.* Page 119

Importance of hyperalimentation in cases of tuberculosis in pregnancy where it is decided not to empty uterus emphasized. Use of following mixture advised to increase appetite: Lysol, 1 part; ichthyol, 10 parts, and glycerin 20 parts. Begin with 1 drop and increase by 1 drop at each dose up to 30 drops, which is maintained. Preparation dropped into half tumblerful of water and taken just before meals. *Stewart.* 175

Four to 8 capsules, each containing 4 grains (0.25 Gm.) of liver substance, *pro die* found effective in arresting or preventing return of hemoptysis. In cases with low arterial tension and asthenia, epinephrin, 5 to 10 drops of 1: 1000 solution daily for five to ten days, followed by like period of rest, or of adrenal substance, 1½ to 5 grains (0.1 to 0.3 Gm.) daily, is indicated. Bayle secures good results by administering 100 Gm. (3½ ounces) of fresh hog spleen every day. Loeper and Esmonet advise pancreatin, 2 to 4 Gm. (3ss-j) in keratin-coated capsules of 0.25 Gm. (4 grains) each, daily in first and second stage cases, and especially in patients with involvement of serous membranes; improves appetite and general condition. *Lereboullet.* 179

Sluggish, afebrile cases of tuberculosis, especially with profuse expectoration, are often greatly bnefited by creosote. *Fishberg.* 180

Addition of tuberculin to sanatorium treatment found to increase chances of clearing sputum of tubercle bacilli by about 17 per cent. in early and moderately advanced cases. *Bardswell.* 363

Treatment of cough in phthisis described: (1) For nervous cough: Swabbing throat with 30 per cent. potassium bromide solution, or taking 15 grains (1 Gm.) of this salt in water. (2) For pharyngeal cough: Gargling with betanaphtholis, gr. iij (0.2 Gm.); sodii boratis, ℥ss (15 Gm.); aquæ menthæ piperitæ, ʒvij (24 c.c.); aquæ, q. s. ad ʒxxxv (140 c.c.). If inflammation present, pharynx to be swabbed with: Cocaine hydrochloridi, gr. ij (0.12 Gm.); resorcinolis, gr. xv (1 Gm.); glycerini, ℥j (30 c.c.). Following gargle also useful: Sodii salicylatis, ʒvj (24 Gm.); antipyrinæ, ʒj (4 Gm.); aquæ laurocerasi, aquæ aurantii florum, āā ʒss (2 c.c.); glycerini, ℥iiss (75 c.c.); aquæ destillatæ, q. s. ad ʒxxxv (140 c.c.). (3) For laryngeal cough: Orthoform powder or a solution of balsam of Peru; following draught: Tincturæ bryoniæ ♏x (0.6 c.c.); tincturæ aconiti, ♏xx (0.2 c.c.); tincturæ belladonnæ foliorum, ♏x (0.6 c.c.); syrupi opii, ℥j; aquæ, ℥iv; one teaspoonful every two hours. (4) For tracheal cough: Terpini hydratis; pulveris ipecacuanhæ et opii, āā gr. ij; to be taken in cachet two or three times a day. (5) For gastric cough, 2 drops of opium tincture or 1/6 grain (0.01 Gm.) of codeine ten minutes before each meal. *Robin.* 363

Tuberculosis, Surgical. TREATMENT. Use of "injectio trypsini" recommended for tuberculous abscesses of all kinds, synovial hydromata, sinuses, arthritis, etc. After an insignificant local reaction, pain, tenderness, and tubercle bacilli disappear, pus becomes more fluid and undergoes absorption, and healthy tissues proliferate. Dilute the preparation as supplied with 2 to 10 parts of sterile saline solution, inject strictly subcutaneously 1 c.c. (of pure preparation), and distribute beneath skin by gentle massage, one to three times a week. Where abscesses, puncture with trocar and inject; where sinuses, inject into surrounding tissues in several places; where ulcers, under their bases; where synovial hydromata, into the sheath, and where tuberculosis of joints, in part directly into joint, partly into surrounding tissues. Undiluted injection used in the joint cases. *Baetzner.* 301

Typhoid Fever. DIAGNOSIS. Modified Russo test recommended: Place in a test-tube enough of a just translucent aqueous solution of methylene blue to extend just above the bowel. Then fill tube with urine and, after mixing, examine color against good daylight. Emerald or mint green indicates positive reaction; any tinge of blue renders it negative. Urines containing bile or blood not suitable for test, and those clouded by phosphates, urates, etc., should be filtered. Test is constantly positive in typhoid and but rarely in other conditions; negative reaction is good evidence of absence of typhoid. Appears early in the disease. *Neuman and Behrend.* 429

TREATMENT. Olive oil considered very useful as a food in 1- to 3- ounce (30 to 90 c.c.) doses 3 times daily. Also useful as a laxative; high injections of lukewarm oil may be given. *Bram.* 47

Collective statistics as to results of use of typhoid vaccines show 423 cases, with only 5.4 per cent. deaths. Dosage used by author: Initial hypodermic injection of 500,000,000, repeated at four-day intervals as long as required, and increased by 100,000,000 each time. Stock-vaccine injections made just under skin over insertion of deltoid or over tensor vaginæ femoris. *Callison.* 57

Series of 65 cases treated without milk, on diet consisting of broths, soups, gruels, gelatin, eggs, sugar of milk and butter. Gelatin given almost ad libitum—6 ounces of 5 per cent. solution, flavored with lemon, vanilla, etc., five times daily. Mortality low, persistent diarrhea only in 4 cases, hemorrhage in 4 and perforation in none. *Johnson and Watt.* 181

Iodine, in aqueous solution or as tincture—the latter in doses of 15 to 25 drops daily in a mixture of cinchona and malaga wines or in milk—given in 44 cases. Cases with profuse

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diarrhea, distention or nausea appeared to improve, rapid recovery usually occurred, and mortality seemed to be lowered. *Arnozan and Carles.* Page 304

Ulcers. TREATMENT. Value of dry treatment of wounds, burns and ulcers emphasized. Keeping a leg ulcer exposed to air, lightly dusted with aristol and stearate of zinc, is an effective treatment. Patient should lie down, elevate leg and protect it from flies and dust with thin layer of gauze. *Pitfield.* 285

In chronic leg ulcers, wash affected surface and surrounding area with 90 per cent. alcohol, and apply following ointment on sterile gauze, with firm bandage from foot to knee: Acidi borici, 3ij (8 Gm.); adipis lanæ, petrolati, ana ℥ij (60 Gm.). Repeat washing with alcohol next day, give whole leg massage with alcohol and stiff brush, and reapply ointment. After a few days, scrape base and edges of ulcer clean. Use the wool-fat ointment for two or three weeks, then 5 to 10 per cent. thymol iodide in cold cream. Continue alcohol treatment, and cauterize granulations with silver nitrate if necessary. *Wade.* 356

Urethritis, Gonococcal. TREATMENT. Fluidextract of aconite recommended for relief of congestion and irritation; 1 minim every one or two hours for intelligent patients and every three or four hours for unintelligent. Interval to be doubled as soon as tingling, perspiration and a feeling of relaxation appear. *Pedersen.* 305

Urticaria. TREATMENT. Epinephrin given subcutaneously in doses of 8 minims (0.5 c.c.) in 6 cases. Two doses always caused complete fading of rash and cessation of itching in ten to twenty minutes. Recurrence probable in an hour or two unless treatment continued. *Swann.* 164

Vincent's Angina. TREATMENT. In mild cases, best results from use of trichloracetic acid. Membrane first removed by hydrogen peroxide and wiping with cotton swab; ulcer then anesthetized with 10 per cent. cocaine solution, and trichloracetic acid applied a few minutes after. Usually 3 or 4 applications at 2- or 3- day intervals necessary. Tincture of iodine preferable where ulceration extensive. For pain, orthoform. Carious teeth to be cared for. General condition also to be improved. *Halstead.* 58

Vomiting. TREATMENT. In a number of instances vomiting can be immediately arrested by means of the pyloric reflex of dilatation, which consists of pressure or concussion of the fifth dorsal spine. *Abrams.* 394

Vomiting of Pregnancy, Pernicious. TREATMENT. Sodium bicarbonate, 5 to 50 grains (0.3 to 3 Gm.) a day, recommended. Part of it often vomited, but some retained. Continue for a week after vomiting stopped. Bowels to be well cleared by colonic flushing. Veronal also found useful. *Lyon.* 59

Whooping-cough. TREATMENT. Pertussis bacterin used in 40 cases. Disease not shortened, but bacterin causes, after preliminary slight aggravation, well-marked, and sometimes remarkable, symptomatic improvement in a certain proportion of cases. Best results produced at the height of the disease. Give 2 or 3 full doses—20 to 50 million bacteria each—at five-day intervals. In young infants moderate doses should be given early; they diminish severity of disease and minimize complications. *Zahorsky.* 48

Pertussis vaccine used in 17 cases. Best dose found to be 40 million bacteria, given in buttocks even to an infant twice a week, or in severe cases in old children, 3 times a week for one week only. If much benefit noted, intervals prolonged, and vice versa. Many cases improved after single dose. No reaction from injections, local or general. Vaccine should be used only in undoubted cases of the disease. The younger the infant, the more rapid the cure. *Scott.* 174

TREATMENT. 1. Following preparation recommended: Ichthyolis, 3iiss (10 Gm.); glycerini, 3ss (15 Gm.); liquoris calcis, 3iiss (10 Gm.); olei amygdalæ amaræ, gtt. iij; olei anisi vel menthæ piperitæ, gtt. x; syrupi, q. s. ad ℥iiiss (100 Gm.). Dose in children up to 1 year of age, 4 to 6 teaspoonfuls; up to 2 years, 3 to 4 dessertspoonfuls; 3 to 4 years, 4 to 5 dessertspoonfuls; 5 years and upward, 4 to 5 tablespoonfuls. These doses can be exceeded in obstinate or long-standing cases, or those complicated with capillary bronchitis or bronchopneumonia. 2. As adjuvant in young children: Instillations of weakly mentholated oil in nose. 3. Emetic and purge at beginning of treatment. 4. If bronchopulmonary complications should appear: Mustard baths and antiseptic inhalations. 5. Where hemoptysis: Inject diphtheria antitoxin and, this failing, hepatic extract. *Naamé.* 306

Wounds. TREATMENT. Treat all wounds on which great force has been exerted, and especially those contaminated by soil and dirt-covered objects, as if infected with gas bacilli. Leave open where possible and irrigate thoroughly with peroxide. Bandage lightly, if at all. Inspect frequently and irrigate often. On first sign or symptom of infection, take smear and examine for *B. aërogenes capsulatus.* Open wound freely, if sutured, and if on limb place latter in bath or irrigate continuously. If condition extensive, expose field widely to air by free incisions. (Do not employ peroxide in full strength or inject in confined spaces or directly under tissues.) *Cramp.* 42

Wounds of face and hands should be closed with subcuticular stitches, especially in women. To prevent subsequent stretching of scar, close superficial fascia with interrupted fine silk sutures before applying subcuticular stitches. After injuries to soft parts of hand, cleanse quickly by immersing in gaso-

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lene; after latter has evaporated, sterilize parts with tincture of iodine and alcohol. *Harper.* Page 119

Application, in gunshot wounds, of steaming towels wrung out in water as hot as can be borne, during thirty minutes night and morning before wound is dressed, recommended. To be continued till all inflammation subsides. *Griffith.* 110

Use of paste made by adding a few drops of mercury bichloride and ammonium chloride solution (1: 2000) to small quantity of zinc oxide recommended for slight wounds, abrasions, injection punctures, indolent ulcers, sores about the face, etc. Where much stinging and itching about abrasions, substitute 2 per cent. phenol for bichloride. *Hiden.* 182

Scarlet red ointment, 2 to 4 per cent., advised for acceleration of healing in granulating postaural operative wounds, after radical removal of rodent ulcers. etc. *Allan.* 359

Book Reviews

HANDBUCH DER PATHOLOGIE DES HARNES. By F. Blumenthal, M.D. Octavo of 492 Pages. Berlin: Urban & Schwarzenberg, 1913. Cloth, 17 marks ($4.25).

This book constitutes a very complete exposition of both the practical and theoretical aspects of the pathology of the urine. The preparation of such a work as this is rendered difficult, owing to the fact that the constitution of the urine is so dependant upon general metabolism as to require, for its intelligible presentation, a full discussion of the latter in each disease dealt with. The book has thus inevitably assumed large proportions, in order that the causes of changes in urinary composition, so far as at present known, might be presented in a logically sequential manner. Especially full is the consideration of diabetes mellitus. The book is, of course, not one for the beginner in clinical diagnosis, but constitutes an extremely valuable and suggestive work of reference for the advanced student of this subject. The author is to be congratulated upon the painstaking thoroughness and withal, clearness, with which the difficult theme he has chosen has been presented.

THE BLOOD OF THE FATHERS: A Play in Four Acts. By G. Frank Lydston, M.D., Chicago: The Riverton Press, 1912.

This play is presented by the author as a plea for the control and regulation of marriage, for the protection of the unborn, and for the sterilization of degenerates; as a protest against the corrupt police systems of America, and as a plea for the salvation of the young prospective criminal, as well as for the education of the layman in matters sociologic. It is forcefully written, and well calculated to emphasize the need and possibility of improvement in the directions referred to.

HOW TO COLLECT A DOCTOR BILL. By Frank P. Davis, M.D., Secretary Oklahoma State Board of Medical Examiners, 1908-11; Superintendent Oklahoma State Institution for Feebleminded, 1910-11; Member County, State and American Medical Associations, etc. Pages 98. Newark: Physicians' Drug News Co., 1913. Cloth, $1.00, net.

The author's avowed excuse for presenting this little book to the profession is that he has often felt the want of just such information as is contained in it. "A man's first duty is to his own, and it is written that the man who fails to collect that which is due him and provides not for his own, and especially for those of his own house, is worse than an infidel." With this as a basic principle, the author proceeds to discuss in successive chapters the mode of procedure of the "successful physician," the most expedient attitude toward debtors, the proper time to collect payments, book-keeping and statements, forms and collecting letters, etc. Over one-half the book is devoted to consideration of the statute of limitations, exemption laws and their application, and extracts from the exemption laws of each State in the Union.

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The General Field

Conducted by A. G. CRANDALL

A Heavy Responsibility

The position of lifeguard on a bathing beach is getting to be no sinecure. Not only must these attendants watch out carefully that no reckless vacationist is allowed to exceed the reasonable limits of safety, but he is now expected to exercise censorship upon the apparel worn by women bathers.

It is but a common act of heroism for an athletic lifeguard, accustomed to frequent dips in the water, to haul some victims of enthusiasm back to shore and assist them in getting their breath once more, but the other form of service demanded involves a great deal more courage than that possessed by the average man.

It is evident that the life-guards at bathing beaches should be women who are proverbially strong swimmers, skillful and daring in rescuing victims of accident, and therefore eminently qualified for the athletic uses of the position; as to their ability to analyze and classify the apparel of other women, there could hardly be any dissension of views.

The Regenerative Value of Recreation

Only a relatively few people are systematic students of criminology, but the number of such students is steadily increasing.

It is a selfish instinct which leads us to shut our eyes to all unpleasant sights, although in some degree perhaps essential to self-preservation. There are many things happening which should be noted by all good citizens.

One thing has been learned by those who have studied the criminal and the causes which have led to his existence, and that is that the best vaccine to confer immunity to the criminal instinct is wholesome recreation. City ordinances which prohibit growing boys from playing wholesome games are designed to foster and develop criminality.

Contrast a crowd of young boys permitted to indulge in athletic sports, like baseball, swimming, etc., with the boys of the narrow court compelled by a stern decree of the local policemen to slink about without such recreation, and it is easy enough to account for the later development of the furtive, sullen, ne'er-do-well.

There have been many acts of aggression by state legislatures which have forced reforms upon unwilling cities within their borders, but the legislature which requires the municipality to provide opportunity for wholesome recreation for growing boys will have done much to stop overcrowding of the penal institutions.

Public Disapproval

The most powerful personality is not immune to public disapproval if such disapproval is justified. Very recent history has afforded frequent examples of this truth. A railroad president has recently resigned as the head of a great system because he had placed himself in such a light as to receive and probably merit the condemnation of a large number of patrons. Notwithstanding many years of the exercise of great discriminatory powers and irrespective of

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aggressive characteristics which were supposed to make him entirely indifferent as to the attitude of the public, he has proved to be but human after all and has gladly unloaded all his responsibilities. This action will not fail to carry conviction to a large number of observant people that this man was in the wrong in his official actions and that no one knew it better than he did himself.

A man of personal force will bear public criticism with great composure so long as he feels absolutely assured that he is in the right. Men wrongly accused have suffered imprisonment for long terms and have surprised their friends when finally vindicated by the comparative composure with which they have endured the unearned penalty. But history affords few examples of the man who can so steel himself against the just resentment of his fellow-men as to preserve his mental composure for any considerable period of time.

All of which goes to show that the ancient axiom, "Conscience makes cowards of us all," is based upon the most fundamental principles.

No Union Hours for the Farmer

It is easy enough to locate industrial communities where the horrors of poverty are evident. Social workers describe these scenes with indignation and graphic completeness of detail. They point out a glaring contrast between the employers living in luxury and the operatives existing in hovels, and demand a more equal division of the profits of the various industries.

Occasionally an operative can rise from the ranks and by great self-denial and display of an unusual degree of executive ability become an employer himself. It might be expected that such a man, knowing the bitter experiences of extreme poverty, would display a greater liberality in his dealings with his employees, but the evidence of history goes to show that this employer's descendants, reared in ease and comfort, are more likely to show a generous spirit toward wage earners.

The fact is that it is not the wage scale which oppresses these operatives so much as it is the extremely high cost of everything which comes from the soil. Owing to the reluctance of these same wage earners to assist in properly tilling the farms, an enormous expanse of nominally fertile lands produce but a fraction of what could be reasonably expected were it possible for the farmer to secure sufficient farm labor.

It will be noticed that investigators who deplore in indignant terms the hardships of industrial workers seldom have any remedy to propose, except an increase of wages. They overlook the fact that were such wages to be increased to a marked extent and the hours of labor shortened, as they propose, that it would become just so much more difficult for the agricultural classes to maintain even the present unsatisfactory standard of tillage. It may be that some of the agitators who are giving inflammatory counsel to the industrial workers may have recommended that some of these operatives go back to the farms to help develop a more effective system of tillage, but if so such instances have escaped our notice.

It is not practical to conduct the various agricultural operations on the eight-hour system. The average farmer is fortunate if he does not have to work more than twelve hours of the twenty-four.

The history of industrialism exhibits few examples where factory workers are

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ever contented to go back to the farms and work according to the farm schedule of labor. Their point of view is in exactly the opposite direction. They wish by all means to remain where they are, to have their hours of labor steadily lessened and their earnings correspondingly increased. This is contrary to reason and the facts of the case. The outlook therefore for a harmonious solution of the existing problem is exceedingly doubtful.

Let Others Do the Same

A bright young man of Philadelphia, fond of the automobile and all that pertains thereto, acquired an unenviable reputation as a speed maniac. Paraphrasing an ancient poem, a police regulation was to him a regulation and nothing more. An indignant cop wildly gesticulating by the roadside presented such humorous aspects to this young man that he sought such occasions rather than avoided them. Finally the inevitable happened and all other forms of expostulation having failed, it was decided that such enthusiasm must be cooled by three months' sojourn in the county jail.

During that three months a great deal of reflection, some calm, and considerable, no doubt, that was not calm, was pulled off and a resolution was formed. And now having served the term and at liberty once more, this energetic young man has decided to do his traveling hereafter where speed laws are unknown. He has given his attention to aviation and, while there may be some risk in the sport, his enthusiasm for high speed is not likely to be hampered by the stern decrees of the country magistrate or the indignant remonstrance of the bicycle cop.

Putting the Screws on the Politician

The politician may recline upon a bed of roses, but at the present time he is doing considerable lying awake at nights.

A lot of new-fangled ideas have taken possession of the public mind so that the average voters, who have been extremely tractable in the past and easy to manage, are arousing considerable concern among their political rulers.

The demand for the state-wide primary which sprang up on all sides was very annoying in political circles—it has a tendency to undermine the solid foundations of the organization. The good old-fashioned system of carrying on a still hunt for delegates to a nominating convention and having only those serve as delegates who were truly loyal seems for the time being to be badly shaken up.

Another annoying phase of the political situation is the prospect that there are likely to be three political parties to be reckoned with. This adds greatly to the difficulties of making up a political slate. Under the old system of harmony, the bosses of two rival parties could revile each other in public and fix up their little deals in private and all would go smoothly and according to program; but with a third party as an unknown factor and likely to develop unexpected numbers at the polls, it is difficult to assure the workers that they can safely expect the promised rewards.

Many a man of comparatively limited natural abilities has acquired the reputation of being an astute politician simply because he was in a position to go along with the system, deliver the orders to the various units making up the organization and wear a smile of confidence. As under present conditions the political manager who is able to control the situation with three aggressively active politi-

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cal parties in operation will have to show considerable speed and adroitness in laying his plans, it looks as though a good many beneficiaries of the former political game would find themselves sadly outclassed and have to go into retirement.

Imitation, but Not Flattery

When a certain Dr. A. Conan Doyle became dissatisfied with the practice of medicine and "went in" for literature, he displayed a remarkable degree of acumen. A great many millions of quite intelligent people have read his detective stories with great satisfaction.

After all it is a question whether it might not have been better for a good many of these readers if Dr. A. Conan Doyle had remained an obscure practitioner instead of becoming one of the literary ornaments of Great Britain with the order of Knighthood.

Quite a considerable list of those who dabble in literature, witnessing the triumphs of the creator of Sherlock Holmes, have endowed other imaginary characters with rare gifts as detectives so that at the present time there could reasonably be expected a slight slump in the market quotations for that kind of fiction.

The wonderful ease with which scheming criminals are apprehended by this new school of detectives might be supposed to give inspiration to the real flesh and blood detectives of police annals; but there seems to be abundant evidence that they have lost sight of the advantages to be derived from reading the brilliant creations which have been developed in such profusion through the inspiration of the great English author. The every-day detective seems to have just as much difficulty in laying his hands upon the criminal whose presence is urgently required at police headquarters as could reasonably be expected to be the case had Sherlock Holmes and all his imitators never existed in the fertile brains of the magazine writers.

It is probable that Sir A. Conan Doyle never reads this imitative detective fiction, otherwise his conscience might cause him some painful reflections.

Must Travel at Their Own Risk

It is evident, with the present congressional attitude as to naval affairs, that Americans who have the habit of wandering into strange countries, especially where there is some anti-American spirit, must be prepared to travel at their own risk.

During the recent administration just closed and also thus far during the present administration, the governmental policy has been "peace at any price." It does not require a very long time for boys to size up the schoolmaster who can be imposed on, especially the one who desires to avoid coming to any issue.

Like a maverick steer turned out to graze in the deserts of Central and South America, the poor Monroe Doctrine has been given very little sustenance for several years.

This is a policy of which such American citizens as still have a little red blood left in them are likely to disapprove sooner or later in no uncertain terms. There are quite a large number of male residents of the several states who still believe in the maintenance of national dignity and who would be glad to think that the American flag conveyed as much protection in a foreign country as the flag of—Portugal, for instance.

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Original Articles

SOME NEWER NOTES ON THE SUBJECT OF PERITONEAL ADHESIONS.*

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IN former years we were engaged with the subject of peritoneal adhesions only as they occurred after acute inflammatory processes, and the subject occupied very little of the literature of the profession. Peritoneal adhesions of insidious onset, without history of any acute preliminary attack, are now receiving attention on every side in the medical profession, and the subject is one of the largest in the entire field of medicine.

Under the conditions of modern civilization, with diminished efficiency of the ductless glands, various toxic processes manifest themselves in ways which are commonly thought to be purely medical, yet give us hieroglyphics within the peritoneal cavity which may be read with larger and larger meaning as we learn how to translate them.

Most of the toxins exerting an influence upon the structures within the peritoneal cavity have their origin from the colonic group of bacteria. Some of the species make their way through the walls of the bowel, causing local effects with the production of symptoms which are commonly ascribed to something else. When the endothelial structures are irritated by bacterial toxins there occurs apparently a desquamation of endothelial cells, followed by a plastic exudate and its organization in the form of various adhesions, which are found in the vicinity of the cecum, sigmoid, and duodenum particularly. To another group, which may perhaps be included among adhesions, belong instances of increased connective-tissue growth occurring at the points where the intestine is more or less fixed—in the region of the cecum

* Read at the Fourteenth Annual Meeting of the American Therapeutic Society, held in Washington, D. C., May 5 and 6, 1913.

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and sigmoid flexure, at the hepatic and splenic flexures, and about the duodenum. Some of these structures which have received names—Lane's kink and Jackson's membrane—are being given attention by many observers, who have not as yet arrived at a conclusion regarding their nature.

It is my belief that these structures made up of hyperplastic connective tissue represent two separate and distinct features. There are first, apparently, certain peritoneal defects due to embryonic remnants — certain peritoneal folds belonging to the fetus which should have undergone absorption, and remaining as more or less definite structures. The secondary feature appears later in connection with toxic processes.

Mr. Lane believes these various structures to be evolutionary in character and not inflammatory. He believes that they are developed as a result of stress placed upon viscera in the erect position of man. My own belief is that these structures are relics, plus hyperplastic processes following toxic impression. When the various bacteria which cause irritation of endothelial structures at the same time cause irritation of connective-tissue structures, a fibrinous exudate is deposited from time to time, and this undergoes absorption, according to the well-known nature of such deposits, near the parts of the intestinal tract where peristalsis keeps the tissues in motion. In other words, a sort of kneading process breaks up new fibrinous exudate, which is absorbed continuously.

Near the fixed parts of the bowel, however, this new fibrinous material is not broken up so readily by the kneading of peristalsis, and remains to form hyperplastic tissue which follows in general the character of the parent tissue. Thus it is for the most part loose in the so-called Jackson's membrane, and more dense in Lane's kink, at the splenic and hepatic flexures of the colon, and in the vicinity of the duodenum.

It is our experience that all of the intraperitoneal adhesions and hyperplastic connective-tissue structures have a tendency to recur after treatment by the surgeon. We are led to the conclusion that the original cause persists; and for that we are to look to the physiology of the individual and to consider the question of direct toxic injury to the protoplasm of cells. A vicious circle is present in most of these cases, which belong more particularly to the neurasthenic group of patients—to the ones with defective ductless glands.

When digestive processes and metabolic processes are incomplete, the toxins which result from bacterial activity exert an ever-increasing influence, if intestinal stasis occurs as a result of the formation of adhesions which interfere with the motility of the bowel. With lessened motility and increased stasis more toxins are formed, so that the individual becomes progressively worse, unless we inhibit the development of the colonic bacteria and make that the chief object of our treatment. The surgeon is a useful resource for the internist, but he is one resource only. The separation of adhesions and of adventitious connective-tissue structures gives temporary relief from many of the distressing features in these cases, but it becomes the function of the internist to so manage digestive processes and the general hygiene of the patient that inefficient ductless glands are assisted and carried to the highest degree of efficiency that is possible in any given case.

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The idea of disposing of the colon entirely is based upon the studies of Metchnikoff, who shows that many of the toxic processes have their origin from colonic bacteria; but this is a severe operation and can be obviated, for the most part, by a short-circuiting operation which unites the rectum or the lower part of the sigmoid flexure with the ileum, near its junction with the cecum. There is a probability that this operation will be performed too frequently within the next few years, because of the character of relief that has been gained—not only relief from intestinal stasis, but from toxic processes like the rheumatisms, many of the neuralgias, neuritis, and, in fact, a list too long to be enumerated here. We should reserve the operation for those cases in which really good and proper medical resources have been applied for a sufficient length of time without giving a high degree of relief. The short-circuiting operation can be done quickly through a short incision, and in itself is hardly a severe operation, but even this resource should be used guardedly and as a species of last resort, instead of as a preliminary resource for making quick work of elaborate troubles.

DISCUSSION.

Dr. Babcock said that the theory advanced by Dr. Morris was certainly very plausible. Personally he was unable to understand or explain the formation of these adhesions and he would appreciate any light on the subject. Sometimes he wondered whether there were not two kinds of them, one due to ordinary causes and the other to toxic causes. Dr. Morris had confined his remarks to cobweb adhesions. We were gradually getting away from the old type of post-surgical adhesions, and they were now but rarely seen. This indicated the great advance that had been made in surgical methods.

Dr. Morris agreed as to the passing of post-surgical adhesions. Less attention was now given to the toilet of the peritoneum and as a result there were fewer adhesions. In many cases harm had come from excessive zeal in this direction.

THE PATHOLOGY AND BACTERIOLOGY OF ACUTE RHEUMATIC FEVER.*

By GUTHRIE McCONNELL, M.D.,

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THE word rheumatism as generally employed is just about as definite in its meaning as is the word neuralgia, or neurasthenia. It is a handy term to have around to employ when the laity demand a given name for their particular ailment. As such it is of distinct value because there are conditions where accurate terminology is impossible; but the word should not be used as a cover under which to hide. The trouble has been that in the past many

* Read before the North Branch of the Philadelphia County Medical Society, March 18, 1913.

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conditions have been grouped under one heading, it being taken for granted that pathological changes similar in character must have resulted from similar causes. Then, too, it was thought that different conditions could not have resulted from the same cause, it not being realized that there may be various stages in the course of a disease process, the manifestations differing according to the period in which they come to our notice.

Closely associated and in a way synonymous with the term rheumatism is that of arthritis. That word also covers a multitude of conditions. According to McCrae[1] it may be divided into eight classes: (1) Traumatic. (2) Arthritis due to infection with definite bacteria, as streptococci, gonococci, pneumococci, and tubercle bacilli. This class includes rheumatic fever. (3) Arthritis occurring in certain diseases such as syphilis and scarlet fever. (4) Gout. (5) Arthritis due to the injection of various sera, as diphtheria antitoxin. (6) Arthritis secondary to diseases of the nervous system, as tabes and syringomyelia. (7) Arthritis in hemophilia, purpura, etc. (8) Arthritis deformans: those cases with certain forms of arthritic changes in which no definite etiological factor can be found.

The difficulty in determining which type is the one under consideration rests upon the impossibility of discovering in many cases the cause of the attack. From a clinical point of view it is probably fairly easy to recognize that condition known at present as acute rheumatic fever. But what are the pathological changes that are present, what called them into being, and how can one differentiate them from other forms, if such be possible?

For quite a number of years many men have realized that this condition resembles in practically every way an acute infectious process. The more this malady was investigated, the greater became the number who claimed that acute articular rheumatism is a specific disease produced by a specific organism. This, of course, had to be proven by carrying out Koch's laws. Is a similar organism always found? Will it reproduce similar lesions in inoculated animals, and can it be recovered from such an animal? In many infections by the gonococcus or the pneumococcus the bacteria have been recovered from the joints when arthritis has resulted, or from the heart's blood when there has been an endocarditis. These types, however, are considered rightly as being secondary manifestations of a primary infectious entity in some other part of the body.

It may be that the inflammatory lesions of acute rheumatic fever are secondary to some original invasion elsewhere, but if so the primary diseased condition has not been given the attention it deserved. It is well known that the tonsils are the favorite lodging grounds for virulent streptococci; it is also a well-recognized fact that many sore throats are referred to as rheumatic. It is more than probable that such represent the primary focus of infection and precede the generalized conditions. It is therefore quite possible, and indeed probable, that in acute rheumatic fever we are dealing with a true infectious process.

[1] Osler's "Modern Medicine," vol. vi, p. 501.

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To determine this, one should find some organism in these conditions; it should be found in the joints, in the blood, in the pericardium. Many men, too numerous to mention, have undertaken this task and have met with varying results, the majority obtaining a micrococcus in many instances. An objection offered by some is that this micrococcus gains entrance as a terminal infection; but Poynton[2] obtained a coccus during an attack of acute rheumatic pericarditis from a man who recovered and was living seven years later.

The organism recovered has, in many instances, been referred to as the *Micrococcus rheumaticus,* and by most has been considered a specific bacterium, the investigators basing their claim on the fact that the coccus thus isolated will produce in monkeys and rabbits polyarthritis, endocarditis, and other manifestations of acute rheumatism. Beattie[3] reports experiments made with two strains of micrococci isolated from cases of articular rheumatism in which he found that they could produce regularly arthritis and occasionally endocarditis. Incidentally the same author concludes that failure to find the bacteria in the fluid from the joints or in the heart's blood does not prove that bacteria were not the cause of the arthritis.

Many others also have isolated micrococci from the blood. Loeb[4] isolated such from the blood of 7 out of 45 cases of acute articular rheumatism, from a knee-joint in 1 case, and from the blood of 1 patient with chorea. Then also Meyer[5] and Menzer[6] have found in the throats of patients suffering with acute rheumatic fever micrococci which produced in rabbits multiple arthritis and often vegetative endocarditis.

After once determining that an organism is present and can be found in the majority of such cases the question that next comes up is the differentiation of the variety of the coccus. A long list of experimenters hold that they are dealing with a specific organism to which, as has already been stated, has been given the name *M. rheumaticus.* Cole,[7] nevertheless, considers that it is unwarranted to establish a distinct variety of streptococcus based on the property of causing arthritis and endocarditis, as he has produced similar lesions with streptococci from various sources. Meakins[8] has confirmed the work of Cole. It must be remembered that the *M. rheumaticus* cannot be distinguished morphologically or culturally from the *Streptococcus pyogenes.* It is only by the production of the disease in animals that the apparent specificity can be shown.

In order to come to some conclusions concerning the relationship of these two cocci, Tunnicliffe[9] made various investigations by means of the opsonic index. Inasmuch as this index in certain acute infectious diseases follows a

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2 Osler's "Modern Medicine," vol. ii, p. 676.
3 Jour. of Path. and Bact., 1910, vol. xiv, p. 432.
4 Arch. Int. Med., 1903, vol. ii, p. 266.
5 Deutsche med. Woch., 1901, vol. xxvii, p. 81.
6 *Ibid.*, p. 97.
7 Jour. of Infect. Dis., 1904, vol. i, p. 714.
8 Canadian Jour. of Med. and Surg., 1909, vol. xxv, p. 71.
9 Jour. of Infect. Dis., 1906, vol. vi, p. 346

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definite and typical course, she undertook to determine the indices to *M. rheumaticus* and *Streptococcus pyogenes* in acute articular rheumatism. She found that in this disease the opsonic index for the two organisms mentioned followed the same course. With involvement of new joints and rise in temperature the indices for both bacteria fell below normal. With improvement in the joints and symptoms the indices rose above normal. In other words, the opsonic index does not indicate any difference between *M. rheumaticus and Strept. pyogenes.* It was also demonstrated that agglutinins to both types of micrococci were present in the sera from 7 out of 12 rheumatism patients, the course of the agglutinins corresponding in general to that of the opsonic indices.

From the articles quoted it would seem quite evident that acute rheumatic fever is caused by a micrococcus. It would appear that the evidence tends to prove that not a specific organism but streptococci are the cause of the disease.

As has been said already, the point of original infection is in all probability the tonsil. The work of Davis[10] is especially interesting along this line. The relation of tonsillar infections to lesions existing in other regions, particularly in the joints, heart and kindeys, has been given considerable attention from the clinical side. It has been observed frequently that permanent cures have followed the removal of the tonsils. Davis made bacteriological examinations of 28 cases of arthritis of varying degrees of severity, associated with tonsillitis. Some of the cases gave histories of having had typical attacks of acute articular rheumatism, but usually the arthritis was chronic in character, with frequent more or less acute exacerbations. From the crypts of the tonsils of 25 of the cases hemolytic streptococci were obtained as the dominating organisms. In many they were in pure growth and in large numbers. In 2 cases the pneumococcus predominated. In the remaining case the *Streptococcus mucosus* was found. Rabbits were injected intravenously with streptococci from 17 of the joint cases and all but 2 strains caused arthritis in the animals; in one instance endocarditis of the tricuspid valve was also present; 10 cases of endocarditis that were suffering from arthritis or had had it showed 6 instances in which hemolytic streptococci in large numbers in the tonsils predominated. The remaining 4 patients showed the pneumococcus. Streptococci from 4 of the cases were injected into animals and caused arthritis in all. After gaining entrance the bacteria select synovial membranes by preference, but also attack the endocardium and pericardium. Why that should be so cannot be explained as yet, but we know that local conditions very markedly affect the liability to infection. According to Davis (*loc. cit.*) the variation in the location of the involvement is due probably to differences in the local resistance of the parts, and not to a difference in the specificity of the organisms.

After the organisms have established themselves in the joints, what are the pathological changes resulting? One of the peculiarities of rheumatic arthritis is that several joints, usually the larger, are involved at one time

[10] Jour. of Infect. Dis., 1912, vol. x, p. 148.

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when adults are attacked. In children it is not uncommon, however, to have the arthritis situated in the joints of the fingers. As in all infectious processes, the abnormal changes vary greatly in degree. If we examine the joints as they appear in experimental arthritis in animals, it will be found that the micrococci are deposited in the subendothelial connective tissue of the synovial membrane, this being accompanied by dilatation of the capillaries, sometimes with hemorrhage. Phagocytic leucocytes will appear and attack the microorganisms. At the same time more or less exudation will occur. At first this will be serous, but later it may become distinctly fibrinous. As a rule, the condition is a simple synovitis and rapidly subsides, leaving little if any permanent disturbance. The organisms are rapidly destroyed, which probably accounts for the fact that many inoculations from arthritic exudates prove negative. Instead of quickly recovering, some one or more of the joints may continue in a state of chronic inflammation, largely as a result of periarticular involvement. The tendons may undergo inflammatory changes and the periosteum also may be attacked, with consequent localized painful thickenings. Occasionally there may arise a distinctly purulent arthritis, one necessitating opening and drainage.

In addition to the joint involvements it is well recognized that in this disease inflammations of the endocardium are very common. There is, however, no pathological change that is pathognomonic of the rheumatic type, the vegetative form with its wart-like deposits of fibrin being the usual form. It is interesting to note that the streptococci from very many of the cases of articular rheumatism have, in the hands of numerous observers, given rise to endocarditis.

Another point that would show the etiological relationship is the experimental production of myocardial lesions. Jackson[11] used streptococci of the type described by Davis and Rosenow in the milk epidemic of sore throat occurring in Chicago. Many of the patients with this disease have had various joint complications, and, indeed, all the streptococci produced arthritis in rabbits. In 10 rabbits the author reports the formation of focal lesions in the myocardium, similar to the lesions in the human heart muscle in acute articular rheumatism. Bracht and Wachter,[12] in using streptococci recovered from the blood of the heart of 2 individuals dying from rheumatism, also produced myocardial lesions in 7 out of 10 rabbits.

From a study of the work of these various experimenters it would seem beyond question that the typical acute articular rheumatism or acute rheumatic fever could be the result of anything except an infection. The clinical history has long been suggestive, and now that the organisms recovered from the lesions have been shown capable of producing similar conditions in experimental animals, there can be no doubt. The only ground, therefore, open for discussion is the determination of the particular type of organism,—whether it

[11] Jour. of Infect. Dis., 1912, vol. xi, p. 243.

[12] Deut. Arch. f. klin. Med., 1909, vol. xcvi, p. 492.

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is or is not a specific micrococcus. From a clinical point of view that is not a matter of great importance, and the more that one studies bacteria, the less inclined does he become to believe that there are sharp lines separating similar organisms into distinct varieties.

CLIMATIC CONDITIONS IN CALIFORNIA: THEIR INFLUENCE ON THE TREATMENT OF TUBERCULOSIS.*

By GEORGE H. EVANS, M.D.,

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That the value of climate as an aid to the treatment of tuberculosis is to be considered of subsidiary importance in the list of essentials must, I believe, be conceded by all who have had the opportunity of observing results anywhere in the civilized world where intelligent scientific treatment of tuberculous patients has been carried out. That discrimination in the choice of climate must be exercised in considering the conditions most favorable to healing in certain cases is freely admitted. That sociological and economic factors must be duly weighed in deciding upon the abode of the majority of these patients must also be remembered. It has been abundantly demonstrated that in any climate permitting hygienic out-of-door living, satisfactory results are possible of attainment, and it can safely be asserted that, regardless of climate, satisfactory results in the treatment of tuberculosis, wherever treated, are in direct proportion to the intelligence, skill and painstaking, constant surveillance of the patient, without which no climate, however favorable, can be reasonably expected to produce good results. As Wolff has well said: "Das Wie in der Behandlung wichtiger ist als das Wo."

It is therefore not the purpose of this paper to extol any climatic peculiarities of California, but rather to give a brief description of the conditions there, in the endeavor to lay before those interested a few facts, which, judging from my experience with medical men living in parts distant from California, are not commonly known. The necessity for this is the more apparent when we see constant evidence of the fact that those who send patients to California, and many of those who write modern textbooks, are generally either ignorant of the area and topography of that State, or have failed practically to apply the facts with which they are conversant. Thus the advice is frequently given to go to California, with the inference that it is a spot where a certain climatic feature exists, and none other. The apparent differences of opinion as to what that feature is become bewildering when one authority compares it to the high, arid regions of the southwestern sections of the United States, another to the balmy, marine climate of the Riviera, another to the desert of Egypt, while still others

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* Read at the Fourteenth Annual Meeting of the American Therapeutic Society, held in Washington, D. C., May 5 and 6, 1913.

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liken it to the mountainous regions of Switzerland or the high altitudes of Colorado. The cause of this confusion is apparent to one acquainted with the topographical features of the State, for probably nowhere else in the world can a single section present those varied features of climate peculiar to all the localities named.

A brief description of the geographical position and extent of California can best illustrate this. The State extends approximately from latitude 32 degrees north to latitude 42 degrees north, with a mean length of nearly 800 miles, and an average width of about 200 miles. It will thus be seen that all of France, all of Italy north of Rome, and half of Spain lie north of the northern boundary of California. It has an area of 158,360 square miles, nearly equal to the combined areas of the New England States, New York, New Jersey and Pennsylvania. In this State are situated the highest and lowest points in the United States proper; Mount Whitney, with an altitude of 14,522 feet, at the one extreme and Salton in the Colorado Desert, 263 feet below sea level, at the other. Between these extremes exist variations in altitude and climatic conditions presenting features of the greatest imaginable diversity.

In a consideration of the controlling factors responsible for the climate of California one must consider, first, the movements of the great continental and oceanic pressure areas. Under this head is included also the most active factor in climatic development, namely, the movements of individual pressure areas, since there is now good ground for believing that the paths of these individual disturbances—large-sized whirls and counter-whirls—are largely determined by the general relations of the permanent pressure areas. The second factor is the prevailing drift of the atmosphere in temperate latitudes from west to east. Thirdly, the proximity of the Pacific Ocean, with a mean annual temperature near the coast line of about 55° F., is an important factor. It is a great natural conservator of heat, and is chiefly responsible for the moderate range of temperature along the coast from San Diego, at the south, as far north as British Columbia. The fourth factor is the exceedingly diversified topography of the country for a distance of 200 miles from the coast inland.

The topography of California can be roughly described as mountainous, with a central valley about 400 miles long and from 50 to 60 miles wide (the latter forming the chief agricultural district of the State). The Sierra Nevada mountains form the eastern boundary of this valley, gradually rising to a height of from 8500 to 14,000 feet. The coast range forms the western boundary, and consists of two or three parallel ranges from 3200 to 5000 feet high. These two ranges are merged into each other north and south by connecting ranges which present this great interior valley as an immense basin, the boundaries of which are broken only by the break in the coast range where the two great rivers of the valley flow into San Francisco Bay, and through which the prevailing westerly breezes blow from the ocean, influencing so much the climate of this great valley. The Sierra Nevadas are

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continued south at a less elevation, forming the eastern boundary of a beautiful section of the State known as Southern California.

In considering climatic conditions in California from the standpoint of the tuberculous, it must be remembered that because of its sparse population (2,686,291) only certain developed sections can present those conditions which make it possible for the tuberculous sufferer to receive the comforts and scientific care necessary for his intelligent treatment. The high altitudes of the State do not present these conditions. The beautiful regions surrounding the Yosemite Valley and the glorious lake regions of the High Sierras are used only as summer resorts, and are accessible only at that season. The dry desert regions of the State have not reached a stage of development where the ordinary comforts of life can be offered to invalids. The State richly abounds, however, in sections where either the features of marine climate or those of valley and moderate altitude can be presented, and where everything necessary to the intelligent and scientific treatment of the tuberculous can be obtained, together with certain unique features which I believe go to make these sections garden spots that cannot be found elsewhere in the United States—features conducive to out-of-door living which are necessary to secure that hearty co-operation on the part of the patient so necessary for successful treatment.

Considering first the climate of the coast, one is impressed by the uniformity of temperature along the entire coast line from north to south, showing, as it does, a difference of but ten degrees Fahrenheit in the mean annual temperature. San Diego, at the extreme south, has a mean annual temperature of 61° F., while that of San Francisco is but 5 degrees less, though it is distant from San Diego 600 miles. The two factors modifying this coast climate are the prevailing easterly drift of the atmosphere, causing the well-known winds from the west, and the proximity of that great body of water, the Pacific Ocean. The popular impression that the warming influence is due to the Japanese Current has no scientific data for its support. This modifying influence, together with certain topographical peculiarities in the coast line, afford localities possessing climatic characteristics similar to those of the Riviera. The best known of these are probably San Diego and Santa Barbara, which will be briefly described.[1]

In addition to the conditions mentioned above as influencing the coast climate, the proximity of the great Colorado Desert on the east, separated from San Diego by a range of mountains, must be mentioned in considering that section. Probably few spots on earth possess the equable climate of San Diego, where there is practically absence of both hot and cold weather. The temperature has exceeded 90° F. nineteen times in thirty years, and four times in the history of the Weather Bureau Station it has touched 32° F., but it has never fallen lower. In 1910 the monthly mean temperature

[1] The figures here given regarding temperatures, humidity, etc., have been obtained from the Reports of the United States Department of Agriculture as compiled by Prof. A. G. McAdie, in charge of the Weather Bureau of San Francisco.

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for January was 52.2° F.; for July, 67° F. The mean annual temperature covering a number of years has been 61.4° F. Because of its proximity to the ocean, the humidity is high, amounting to 78 per cent. The desert winds are responsible for temperatures exceeding 90° F., which are necessarily accompanied by a considerable lowering of the humidity. The average yearly rainfall is nine and one-half inches, and the records show an average of only four days each year without sunshine.

San Diego presents excellent facilities for the treatment of those cases of tuberculosis complicated by dry catarrh of the upper respiratory passages, tuberculous laryngitis, kidney complications, and most of the cardiovascular affections.

Santa Barbara lies considerably farther north on the Southern California Coast—a beautiful city of homes encircled by foot hills, except to the south, where it faces the sea. It possesses an annual mean temperature of about 60° F., and, while the average daily variations are somewhat higher than those of San Diego, the temperatures of the winter and spring months approximate 56° F., and those of the summer and fall months rise only to 63° F. The average humidity is 71 per cent. The number of clear days in the year amounts to 241. Santa Barbara possesses, therefore, those climatic qualities suitable for the treatment of such cases as have been mentioned under the description of San Diego.

It is in the opportunities for the reception of patients suitable for treatment in the valley and low mountain regions that California presents its chief claim as a resort for the tuberculous. Both Southern and Northern California abound in such regions, where pure air, free from germs and dust, moderate humidity, freedom from wind storms, maximum amount of sunshine, and moderate temperature the year round, make possible and pleasurable the open-air treatment of tuberculosis at all seasons of the year. It would be impossible in a communication of reasonable length to attempt a description of all these sections, and, indeed, it scarcely seems necessary, for they all more or less partake of the same characteristic climatic qualities, save that in the northern and central portions of the State the precipitation is greater, and the sunshine has a peculiar "soft" quality in contradistinction to the glare which is present in the south. Strange to say, this is a quality which has not been dwelt upon by those writing on climatology, and I believe its sedative influences have not been sufficiently recognized.

Probably the best known locality is Los Angeles and its vicinity. The city is located in a valley eighteen miles from the ocean. The prevailing wind is west, which, coming from the ocean, causes the humidity to average high. Morning fogs are frequent from the spring to the autumn, but they disappear in the early forenoon. Los Angeles has an average annual temperature of 62° F., with an average daily range of 22° F. Its annual mean rainfall is 15.71 inches, and it has an average of 317 clear days in the year. In its immediate environs may be found many places at altitudes of from 500 to 2000 feet where all the advantages for treatment exist for that large class

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of patients unsuitable for high mountain sections—which class, after all, probably constitutes the vast majority of the tuberculous.

San Francisco is a city famous for many things, not the least of which is the peculiarity of its climate. By reason of its unique situation with respect to ocean, bay and mountain, a strange mixture of marine and continental climates is here found. Winter and summer are purely relative terms. The mean annual temperature is 56.1° F., with a difference of only 10° F. between the average maximum and minimum. The annual precipitation is 22.75 inches. The summer months are dry, save for the fog which is driven in from the ocean almost every afternoon during these months by the prevailing westerly winds, and which contributes so largely to the modification of the climate of San Francisco and also that of the entire central portion of the State. The climate can best be described as bleak. The humidity is naturally high, and the average number of clear days is but 185. It must therefore be freely admitted that such a climate does not seem conducive to out-of-door living; but for tuberculous cases uncomplicated by asthma and bronchial affections with much secretion I have found the stimulating effects on metabolism of this climate of great therapeutic value, and have repeatedly seen chronic fibrous processes which had remained stationary elsewhere advance favorably under the tonic effects of the bracing San Francisco climate. During the winter months, while the rains are sometimes heavy, San Francisco is practically free from the heavy fogs and the strong westerly winds, making these months by far the most desirable for out-of-door living.

The modifying influence of the ocean winds and fogs through the Bay of San Francisco is productive of climatic conditions in innumerable valley and low mountain localities in the vicinity of San Francisco which offer unsurpassed opportunities for that large class of moderately advanced cases with lowered resistance—cases which in my experience do not do well in the stimulating yet rigorous climate of resorts at great altitudes. Here are also to be found all those comforts and essentials of a well-developed civilization which, together with equable temperature conditions at all times, moderate humidity, and maximum amount of sunshine, rob out-of-door living of all the unpleasant features of the rigorous winter climate of the Eastern States. It would take a study in detail of the topography of the land surrounding San Francisco and its wonderful bay to explain the great differences in climatic conditions between the city and these sheltered spots in its immediate vicinity. The limitations of this paper will not admit of such a description. It is a fact, however, that one can reach, in an hour's journey from the city, valley and low mountain localities which are absolutely free from the winds and fogs of San Francisco, and where the influences of these factors only modify and make delightful living conditions in these favored sections.

This communication would not be complete without a word of warning regarding industrial conditions in California. The sparsity of population conveys the natural inference that California, in addition to its climatic

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advantages, offers facilities for all sorts of light employment for the ambulant tuberculous. California invites and encourages the immigration of colonists physically and pecuniarily equipped to develop and till its vast areas of land, which only await the touch of the magic wand of irrigation to cause them to burst forth into wonderful agricultural productiveness. On the other hand, one of the most pathetic scenes that is to be daily seen on the streets of all its large cities is the number of unemployed tuberculous hopelessly looking for relief in localities as overcrowded industrially as are such cities elsewhere, where only the physically fit are needed, and where the supply of labor usually exceeds the demands. The necessity of emphasizing this statement is apparent from the large number of patients without adequate funds who are sent to California annually by physicians, throughout the country, who have no knowledge of industrial conditions there. The sad result of this thoughtlessness is seen in the high mortality records from tuberculosis in the floating population, particularly in the Southern California counties. California offers no opportunity for the tuberculous mendicant.

In conclusion, I desire to protest against a custom altogether too prevalent, despite all that has been said and written upon the subject, namely, that of sending tuberculous patients to favored sections anywhere without regard to the necessity of constant medical guidance by those specially trained. It is to be hoped that the day will soon come when the truth of this statement will be so impressed upon the minds of medical men everywhere that the relative value of climate and skilled medical care will find their true adjustment; when, with tuberculosis as with other chronic diseases, provision for proper medical care will be the first consideration in sending these sufferers from home.

After all the controversy that has been waged over this subject it is indeed interesting, in reviewing the literature covering the past ten years or less, to note that, almost without exception, those who emphasize the importance of climate as the great factor in treatment are those who live at health resorts. It is but natural that such men as Lawrason Brown, quoting Sandwith, should say: "Become early inoculated with the microbe of universal belief in the place in which they live."[2] It is readily admitted that in the progress of a disease as chronic as tuberculosis, in which so many different factors enter into and influence the treatment, it is exceedingly difficult to give each its proper place. The selection of a suitable climate, based upon a careful consideration of the needs of the individual case; a proper correlation of rest and exercise; proper attention to the nutrition of the patient; tuberculin—all are important factors in therapy. No amount of theoretical argument, however, as to the specific value of any climatic quality in any place can weigh for a moment against the abundant testimony of successful treatment obtained by men trained in the handling of these patients, regardless of the locality in which they live.

[2] Osler's "Modern Medicine," vol. iii, page 392.

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THE APPLICATION OF SOME MUSCULAR TISSUES ADAPTED TO PHYSIOLOGICAL STANDARDIZATION.*

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The object of this paper is to place before the Society data regarding the standardization of certain drugs and galenical preparations by measuring their physiological action upon non-striated muscular tissue. The muscular tissue of uteri taken from non-pregnant guinea-pigs was used in these experiments, and fluidextract of ergot was employed. It was our purpose to extend these experiments to muscular tissue obtained from other parts of the body and from other animals, as well as to use other drugs, but time did not permit. We are therefore submitting this as a preliminary report and propose to continue our investigations for another year.

It is, of course, well known to the profession that non-striated muscular tissue exhibits automatic (spontaneous) rhythmic contractions. It is also well known that certain drugs have the power of stimulating the normal muscular movements. Experiments have been made by competent pharmacologists to utilize these facts in the standardization of ergot, pituitary extract, and other drugs of this class. Various forms of apparatus have been used for the purpose, and intact or isolated muscular tissue employed.

Our work has been limited to experiments upon the isolated uteri of guinea-pigs. Non-concordant results obtained by other workers with isolated uteri have been ascribed to the interference of spontaneous contractions and the increasing irritability of the muscle tissue under the continued influence of the drug. They have been endeavoring to overcome these objections by selecting the uteri of animals manifesting the least degree of these normal movements, preferably those of the cat. To illustrate: Edmunds and Hale, in reporting their observations upon the non-pregnant uteri of cats, state in Bulletin No. 76, Hyg. Lab., U. S. Public Health and Marine Hospital Service, Washington: "It is true that the uteri of young cats which may be perfectly quiet in the earlier stages of an experiment after some time may begin to contract spontaneously and increase the difficulty of making comparisons of the effects from successive injections of the drug." In such cases, the authors say "it may be

* Read at the Fourteenth Annual Meeting of the American Therapeutic Society, held in Washington, D. C., May 5 and 6, 1913.

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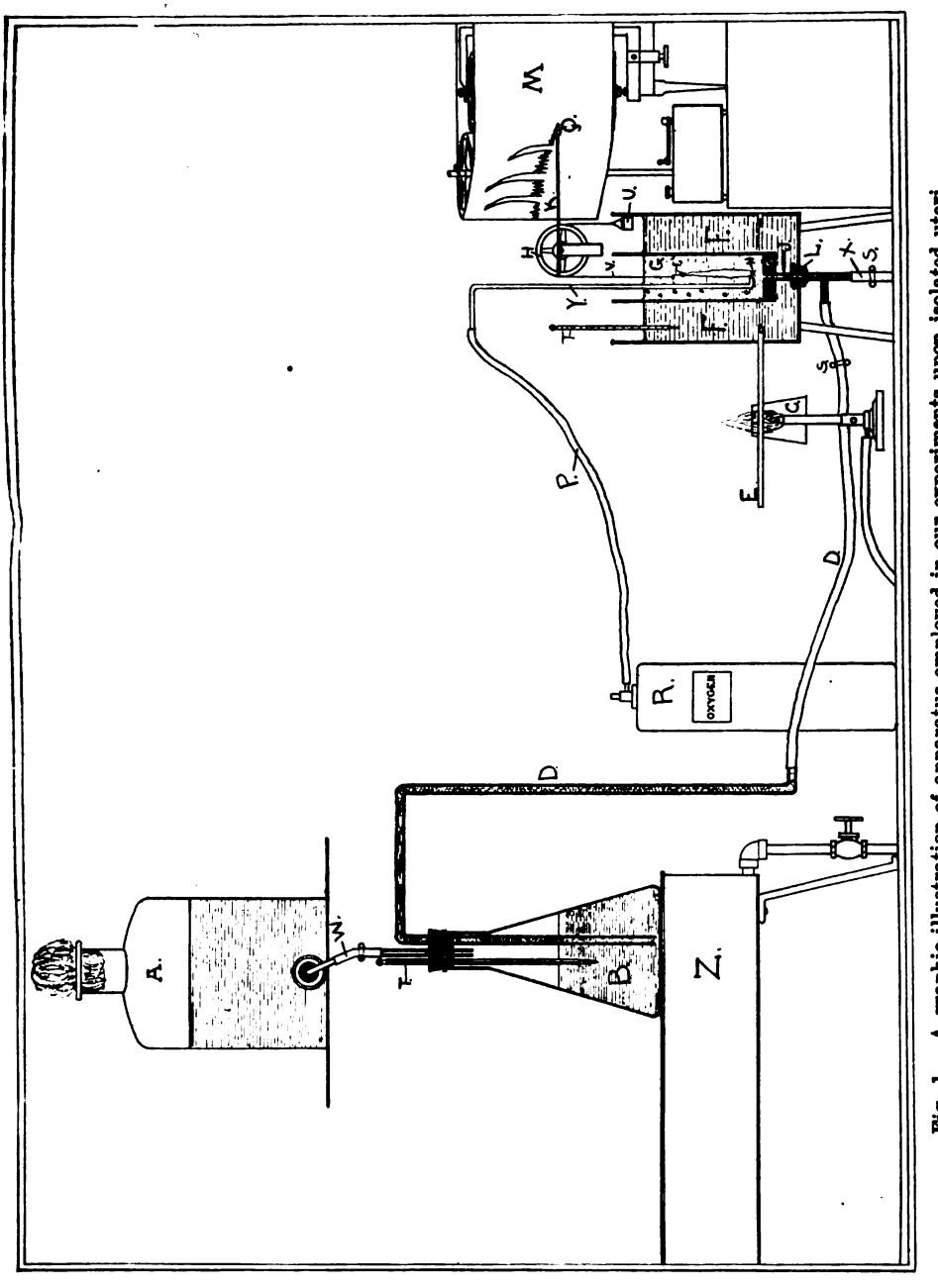

Fig. 1.—A graphic illustration of apparatus employed in our experiments upon isolated uteri.

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necessary to employ as a standard the smallest amount which will clearly influence these movements, as, for example, by delay in the relaxation."

The uteri best adapted to our method, on the contrary, are those which manifest *the highest* degree of normal spontaneous movements. By weighting the uterus down, and thus reducing the amplitude of these movements, they can be controlled and measured. In our experiments the uterus is suspended in about 250 c.c. of Ringer's solution contained in a cylindrical glass vessel (Fig. 1, *G*) the lower end of which is plugged with a rubber stopper (*O*) having a central bore. Through the latter passes one arm of a wide glass "T" tube (*J*) which ends flush with the upper surface of the stopper, so that the cylindrical vessel may be completely emptied. This tube passes through a second rubber stopper (*L*) which fills an opening in the bottom of an outer metallic vessel (*F*) which forms a constant temperature water jacket. The temperature of the water in this jacket is kept constant by means of a metallic rod (*E*) which penetrates the wall of the jacket and passes through the water and is soldered to the opposite side of the jacket. The portion of the rod external to the jacket is heated by a protected Bunsen burner (*C*) which slides on the rod. The temperature is regulated by sliding this burner backward and forward until that point is found where the amount of heat transmitted by the rod to the water inside is sufficient to keep the thermometer (*T*) suspended in the water at the proper degree (38° to 39° C.). One of the other arms of the "T" tube is connected by a rubber junction (*X*) armed with spring clamps (*S*) to a waste pipe, by which the cylindrical glass vessel may be emptied. The remaining arm is connected by a siphon tube (*D*) to a flask (*B*) which holds a small amount of Ringer's solution for refilling the cylindrical vessel. This flask is kept at a temperature between 40° C. and 45° C. by means of a steam bath (*Z*).

The main supply of Ringer's solution is contained in a large aspirator bottle (*A*) connected with the small flask by a rubber tube (*W*), the object being to avoid exposing the reserve solution to prolonged heat. Heat causes Ringer's solution gradually to decompose and lose CO_2. The Ringer solution in the small flask should be reduced to 39° C. immediately before admitting it to the cylindrical vessel by allowing sufficient cold solution to run into it from the aspirator bottle.

Into the cylindrical vessel containing the Ringer solution di
glass tube (*Y*). This tube is turned at a right angle about hal
its lower end. Into this end is inserted a platinum pin (*N*) f
lower end of the isolated uterus. The upper end of the
means of rubber tubing to an oxygen reservoir. A constan
allowed to bubble through a small vent situated at the lo
thus preserving the muscular irritability of the uterus
stirring the Ringer solution in the cylindrical vessel.

The *other end of the uterus* is fastened to a small
nected to a silk thread (*V*) which passes over an eso
tached to a pin on the opposite side of the wheel (*
for holding shot (*U*) is attached to the other side
is soldered a stylet of aluminum, the axle of the

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To the end of this stylet a pen point is fixed for recording the contractions of the uterus on the revolving drum of the kymograph. The terms "no weights" and "weights added" used in this paper refer to the shot used in inhibiting the normal contractions of the uterus,—not to the counterpoise employed to keep the uterus suspended in the Ringer solution.

METHOD OF PROCEDURE.—The animal is killed, the uterus removed, and one horn is taken for operating the apparatus. This horn is quickly transferred to the Ringer solution in the cylindrical vessel and attached to the two platinum pins above referred to. The manipulation and exposure followed by the immersion in the warm solution will almost invariably produce a high degree of tonus, which gradually diminishes until the uterus returns to its normal condition. The weights are now added by dropping shot into the bucket until the uterus can make only small rhythmic contractions. Conditions are now suitable for determining the activity of the drug to be tested and standardized.

Assuming that ergot is the drug under consideration and the fluidextract the preparation requiring standardization, the operator further proceeds as follows:—

The alcohol from a convenient amount of fluidextract of ergot is evaporated by placing the latter in a capsule over a water bath, and the product is made up to its original volume with water. If a dose of this ergot preparation be now pipetted into the Ringer solution in which the uterus is suspended the following phenomena occur: The uterus, which was recording small rhythmic contractions on the drum of the kymograph, now forcibly contracts and records its contraction by a long sweeping curve. After the curve reaches its maximum and commences to decline, which may require from five to fifteen minutes, the medicated Ringer solution is quickly run off and replaced by fresh solution, previously adjusted to the proper temperature. The curve now quickly returns to normal and the uterus continues to record its small rhythmic contractions. Another dose may now be added, resulting in a similar contraction, which is recorded on the drum of the kymograph as before. By progressively increasing or decreasing the doses of a standard preparation, the operator is soon enabled to find the point where the dose given will produce almost a maximum tonus. It is now comparatively easy to determine the strength of the unknown solution by ascertaining the amou.. required to produce contractions of the same amplitude as those produced by the standard preparation.

DESCRIPTION OF CHARTS.—Chart No. 1 demonstrates, first, the normally acting uterus (*A* to *B*); second, the action when weighted down by shot (*B* to *C*), and, third, the action of ergot on the uterus when loaded and working against resistance (1, 2, and 3). This uterus is unusually active. As before stated, in selecting uteri for standardization work very active uteri are to be preferred, because they are able to carry the load, and will respond to stimuli sufficiently for standardization purposes.

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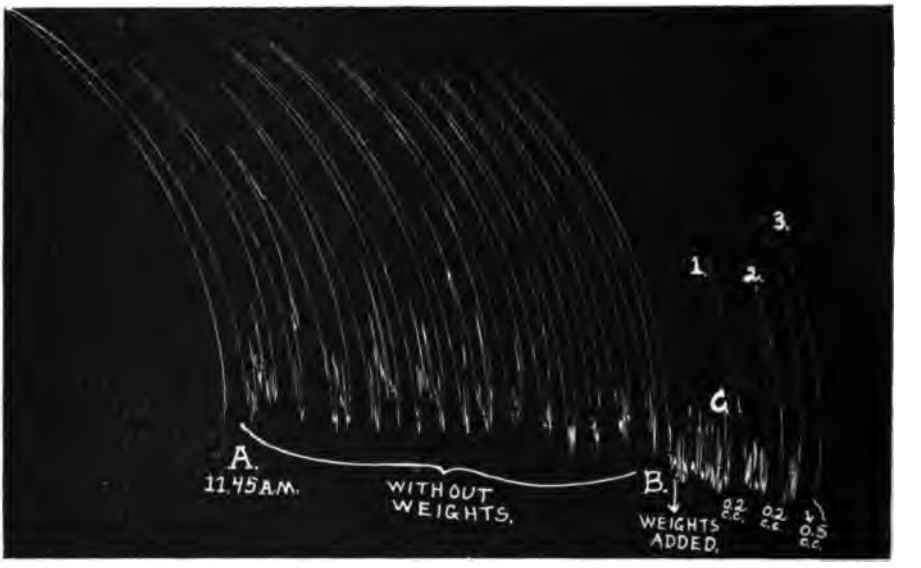

Chart No. 1.

Chart No. 2 shows, first, the normally acting uterus (*A* to *B*); second, the non-concordant results produced by repeated doses of the same amount of

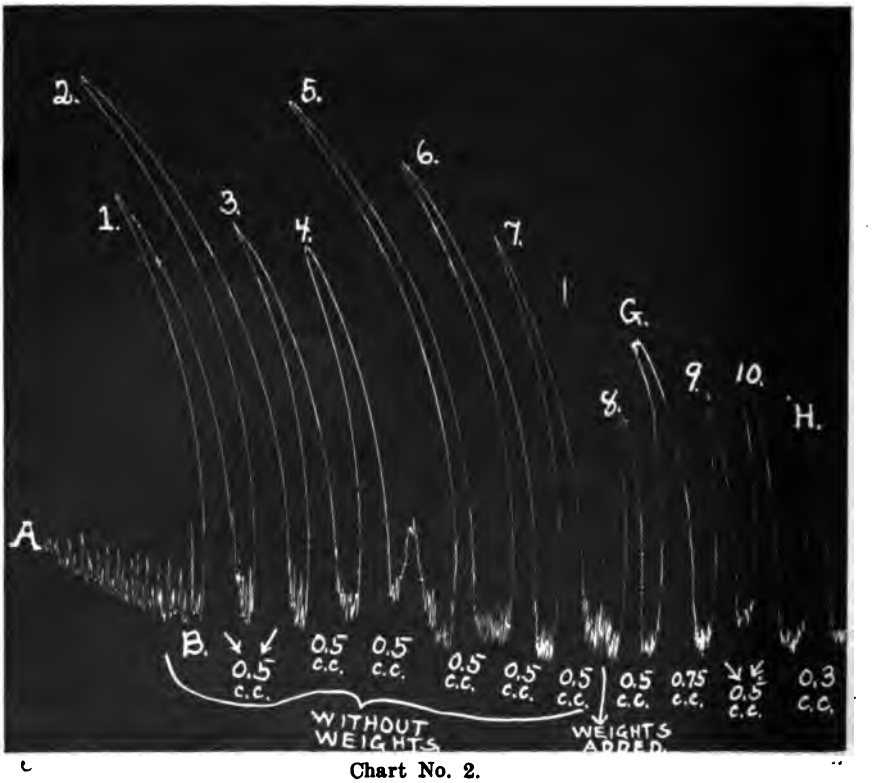

Chart No. 2.

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fluidextract of ergot (1, 2, 3, 4, 5, 6, 7), and, third, concordant results obtained from doses given after the uterine contractions are controlled by weights (8, 9, 10). The curves *G* and *H* indicate the quantitative results obtained with a larger and a smaller dose.

Chart 3. This illustration is similar to Chart 2. *A* to *B* show normal contractions; 1, 2, 3, 4, 5, non-concordant results obtained without weights; 6, 7, 10, 11, 12, 13, concordant results obtained after weights were added. The curves 8 and 9 indicate contractions produced under the increased stimulation

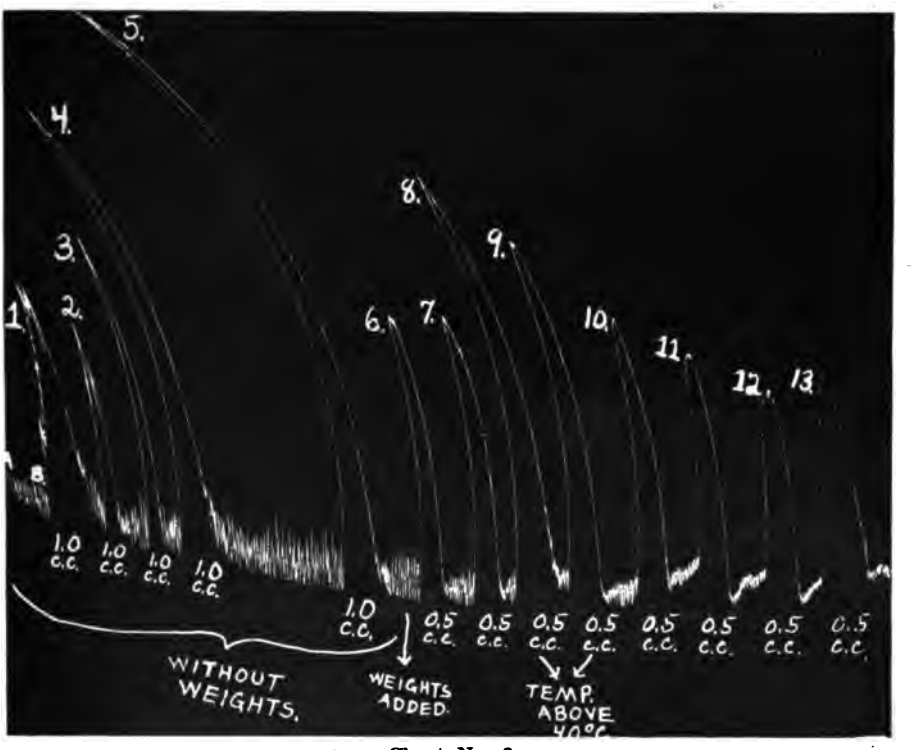

Chart No. 3.

due to rise in the temperature of the Ringer solution, and show the necessity of maintaining an even temperature during the experiment.

Chart 4. This chart clearly demonstrates the concordant results from repeating doses of equal amount. Figures 1, 2, and 11 indicate quantitative results obtained by varying the doses, and demonstrate the accuracy of this method of standardization.

During these experiments we were impressed by the differences in uteri as to power and muscular structure, and the mutual relation. Some specimens were greatly deficient in muscular substance and acted feebly. Other specimens showed greater muscular development and contracted strongly. Some of the specimens proved absolutely inert and would not respond at all.

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Chart No. 4.

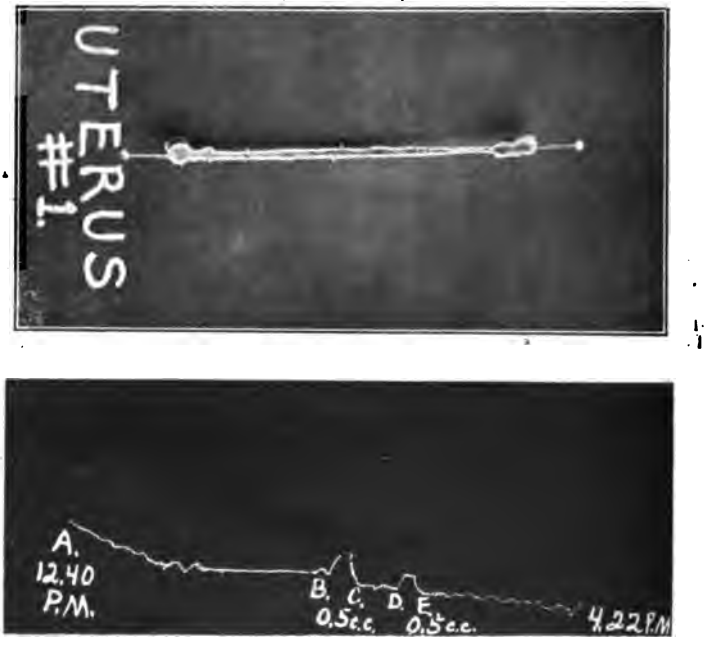

Chart No. 5, Uterus No. 1.

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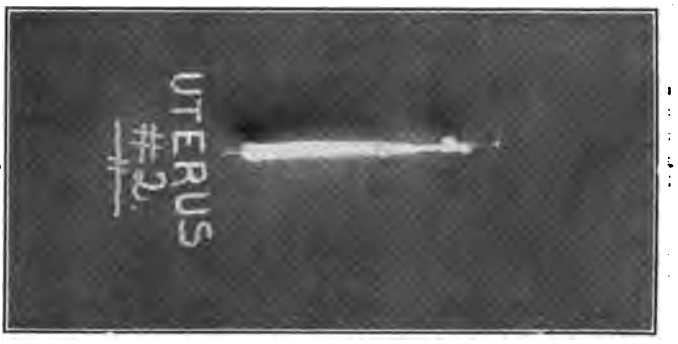
Chart 5 (Uterus No. 1) illustrates what occurs when an inert uterus is selected. *A* to *B* shows the condition of the uterus without ergot. *B* to *C* and *D* to *E* show slight curves after adding the ergot.



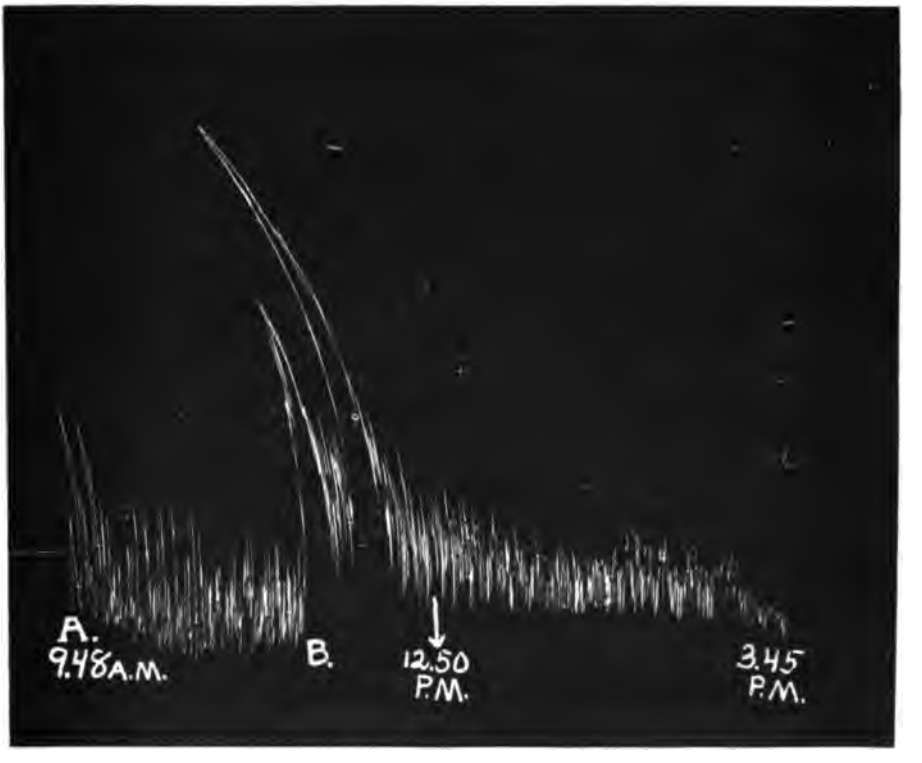


Chart No. 6.

Chart 6 (Uterus No. 2) shows a well-selected uterus acting under normal conditions, *i.e.*, without weights. At *B* ergot was added and the uterus immediately contracted. Instead of washing out the ergot in the usual manner, the uterus was allowed to continue under its influence. An increase in muscular tone was now noted, and the uterus went on with its automatic rhythmical peristalsis on a higher plane.

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It will be noted in studying these charts as a whole that the guinea-pig's uterus appears to possess two kinds of motion, indicated by remitting curves and intermitting curves, respectively. The remitting curves appear to be constant, and not interrupted by the long, sweeping, intermittent curves upon which the former are superimposed. This is admirably illustrated

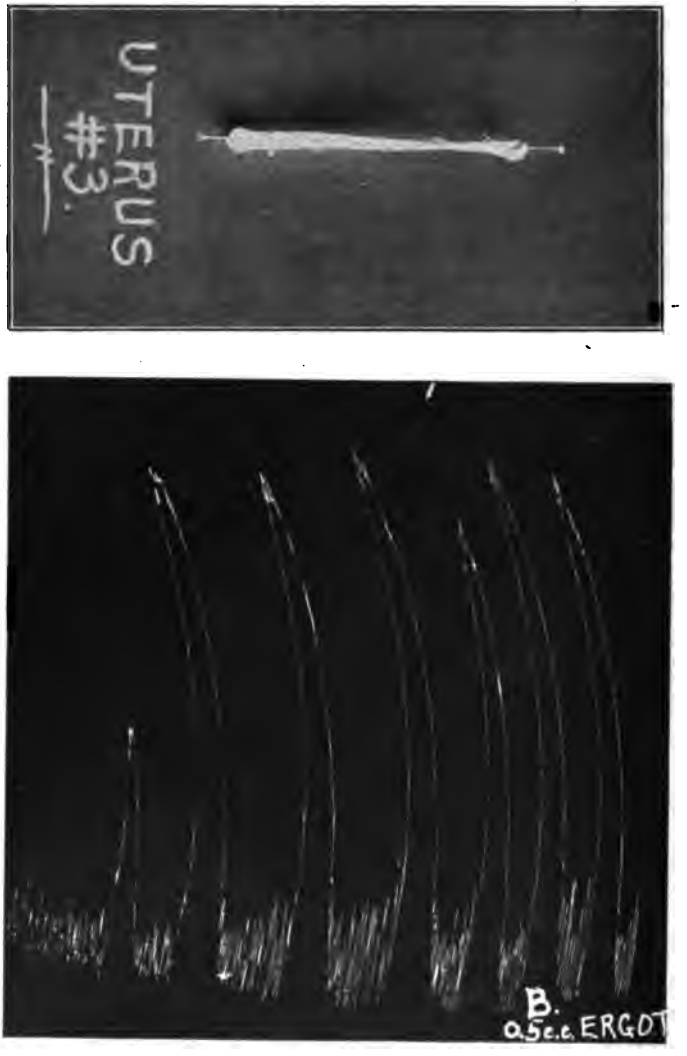

Chart No. 7.

by Chart 7 (Uterus No. 3). This uterus shows normal muscular contractions; also the short, remittent curves, and the long, intermittent curves, the latter occurring approximately once in every twenty or twenty-five minutes, and requiring about fifteen minutes to complete the contraction and relaxation. A dose of ergot was given at *B* without influencing the uterus; thus demonstrating that it had been undergoing complete normal contractions before the

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ergot was added. A uterus of this character is of especial value for standardization work, as already stated.

Chart 8 also demonstrates the two motions of the uterus. It will be noted that the small rhythmic contractions are superimposed upon the curves produced by the tonic contractions. In order to show this point more clearly the drum was allowed to revolve at the rate of 1 revolution per hour, or ten times as fast as in all other tracings.

Chart No. 8.

Charts 2, 6, 7, 8, 9, 10, and 11 serve to illustrate the marked differences in the muscular character of the uteri of the guinea-pig, shown by exhibits of mounted uteri numbered 1, 2, 3, 4, 5, 6, 7, and 8, respectively, as well as by the curves recorded by these uteri on the revolving drum of the kymograph.

Exhibits illustrating differences in guinea-pig uteri:—

Uterus No. 1: See Chart 5.
Uterus No. 2: See Chart 6.
Uterus No. 3: See Chart 7.
Uterus No. 4: See Chart 9.
Uterus No. 5: See Chart 2 (*A* to *B*)
Uterus No. 6: See Chart 10.
Uterus No. 7: See Chart 11.
Uterus No. 8: See Chart 1?

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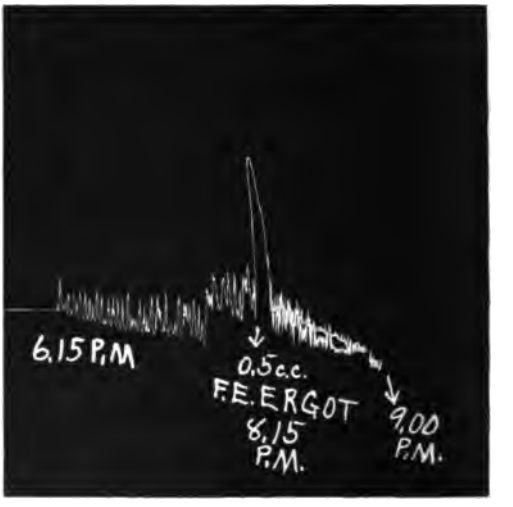

Chart No. 9.

This uterus (No. 5) was used in making tracing shown in Chart No. 2. The normal contractions of this uterus are shown from *A* to *B*.

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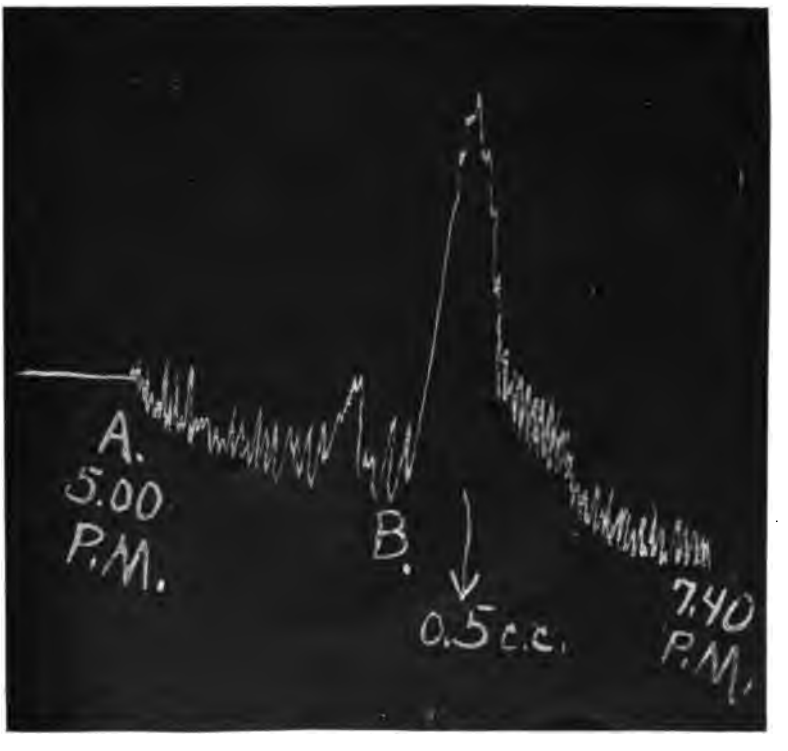

Chart No. 10.

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These exhibits demonstrate the enormous variation in the normal uterine contractions and an equally enormous difference in susceptibility to the action of uterine stimulants. The differences between normal uterine movements and susceptibility to stimulation seem to be on parallel lines. How can these

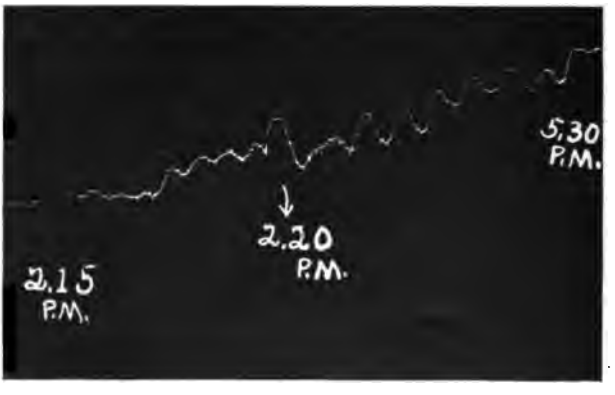

Chart No. 11.

phenomena be explained? Are they due to differences in the muscular structure of the uteri? Such differences seem to account in part for the phenomena, since inspection of the exhibits of uteri prepared and mounted for purposes of illustration show great differences in the amount of muscular tissue present. The "stringy" uteri were deficient in normal activity, as well as in activity in

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response to stimuli. The thick, more muscular uteri were all active and sensitive.

To what extent do similar conditions exist in human uteri? In considering the action of non-standardized drugs we are always confronted with two uncertain factors, namely, differences in the susceptibility of patients and variation in the activity of drugs. By standardizing drugs we render them instruments of precision and eliminate one of these variable factors. Hence the importance of drug standardization.

GONORRHEA IN THE FEMALE.*

By SWITHIN CHANDLER, M.D.,

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The year 1879 marks the beginning of the proper and scientific understanding and treatment of gonorrhea, because it is in that year that Neisser recognized the gonococcus to be the specific germ of this disease. The causes of discharges from the vaginal canal had not been understood and the treatment prior to this time had been most haphazard, perfunctory and ill-advised. In fact the true beginning of specific treatment for gonorrhea in the female did not take place until 1887, when Bumm presented accurate and reliable evidence that the gonococcus was the sole and invariable cause of gonorrhea. It was years after this before it was realized just how great the magnitude of disaster was that occurred after such gonorrheal infections in the female. Even in our present day, in spite of the campaign of education, many lay people think that gonorrhea in the female is a trifling affair. Gradually every one is being educated to the fact that it is a most horrible disease, both in the original infection and in its fearful results. It has been stated that 30 per cent. of all blindness, 70 per cent. of sterility, and 50 per cent. of all operations upon the female are due to gonorrheal infection. Therefore it is fitting that a paper on this subject should be written, discussed and brought to the general notice in order that the subject should receive the consideration due it.

In order that the subject may be presented in all its details, its consideration will begin at the external orifice of the female genital organs and then be continued upward to its ultimate local results. This will be done without regard to the part primarily attacked. In order to avoid repetitions a short anatomical description of the female organs will be first given.

The labia are two prominent longitudinal, cutaneous folds extending from the mons veneris to the anterior boundary of the perineum, and enclosing the urinosexual opening. The skin externally is covered by hair. Internally the mucous membrane is continuous with the genitourinary mucous tract.

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* Read at a meeting of the Philadelphia Clinical Association, January 6, 1913.

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Between these two are areolar tissue and fat, besides blood-vessels, nerves, and glands. Just within the posterior commissure formed by the labia is a transverse fold, the fourchette, and in the space between it and the commissure exists the fossa navicularis. Just within the labia majora are the labia minora, composed of folds of mucous membrane and extending from the clitoris to the sides of the vaginal opening. In the mucous membrane are numerous mucous crypts. Between the clitoris and the entrance to the vagina is a triangular space, the vestibule. In this space is the meatus, and just posterior to this is the central circular membrane, the hymen, which, when torn, forms the caruncule myrtiformes. The glands of Bartholin are situated just inside of the vaginal opening, and their ducts open on the inner side of the nymphæ, external to the hymen. The urethra is a membranous canal extending from the meatus to the neck of the bladder, and consists of three coats, muscular, erectile and mucous. The mucous membrane has many depressions, and blind canals (Morgagni's lacunæ) and racemose glands (Littré's). Inside of the meatus are two glands (Skene's) opening just within the former. The bladder is composed of mucous, connective, and muscular layers of tissue, and is partially covered by peritoneum. The vagina also consists of connective, muscular, and mucous tissue. The existence of mucous glands here is disputed, but fat glands are known to exist in the connective tissue. The lymphatics from the lower part of the vagina go to the inguinal glands, as do also those of the vulva. The middle go to the iliac (internal) glands, the upper to the cervical. The uterus, divided into the neck and body, is composed of serous, muscular, and mucous tissue. The latter contains the utricular glands and their openings, while the cervix has racemose glands. The broad ligament is a doubly folded serous membrane containing connective tissue around the cervix (the parametrium). Above, it holds the ovaries, round ligament and tubes, and partially the uterus. It also contains the lymphatic glands draining the uterus, connecting with great lymphatic vessels that lead to the iliac glands, lumbar glands, and to some extent the inguinal glands. The tubes leading from the upper apices of the uterus proceed to the ovaries in front. They are constricted at the inner third, the isthmus. They are largest in the middle part (receptaculum seminis). The fimbria is the outer third, and is attached to the ovary, forming a channel from the ovary to the tube. An opening exists into the abdominal cavity (ostium abdominale). The tubes have the same structure as the uterus. The mesosalpinx is that part of the broad ligament which lies between the tube and the ovary; it carries the utero-ovarian vessels, and ends in the infundibulopelvic ligament. The ovaries, situated in a cavity in the posterior part of the broad ligament, are covered by epithelial cells and divided into an outer parenchymatous zone containing muscular and connective tissue, the ovisacs, the Graafian follicles, and the internal vascular zone, with its blood-vessels. After this review of the anatomy, we may proceed directly to the subject before us.

With the patient, already infected, presenting herself, one begins with the examination, and the first structures to be noticed are the labia and

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their contained glands. On the external skin surface, the glands are found involved, the appearance of infected pimples being given. The hair is often matted together, if the infected gland has ruptured. If the gland has not ruptured it is best to cut into the purulent elevation, thoroughly wash out the part with a 1: 2000 bichloride solution, and paint it with strong tincture of iodine, leaving a smear of 5 per cent. iodine ointment over the region. It is well to paint the surrounding parts, including both labia majora, externally with the strong iodine tincture. This treatment will eradicate the local trouble in the course of a few days, and upon continuing to paint the parts as described it will prevent reinfection.

Separating the labia, one observes a thick or thin creamy discharge, which dries to a thick, staining matter. Here there is furnished, as in other parts, evidence of an acute, subacute or chronic gonorrhea. In the event of acute trouble it is best to keep the parts bathed with a 20-grain to the ounce boric acid solution. Further parting the labia when they are diseased, one finds the mucous membrane of which they are composed more or less swollen and covered with a purulent exudate, according to the degree of inflammation and the duration and character of the infection. Likewise the fossa navicularis will be found bathed in a pool of purulent discharge. In the acute stage a mild solution of boric acid constitutes the best treatment. When the acute condition has exhausted itself, permanganate of potassium, 1 grain to the ounce, or nitrate of silver, ¼ grain to the ounce, is the treatment required, care being taken to keep the parts clean with mild boric acid solution, because they are subject to reinfection.

At times Bartholin's glands are infected, or they may become so later on account of the specific discharge from above. In the judgment of the author there is but one good mode of treatment, and that is freely to incise the infected gland, wash it out with bichloride or other antiseptic solution, and paint the cavity, after thorough cleansing, with tincture of iodine. Some writers suggest entire removal of the gland, but in acute gonorrhea this seems quite unjustifiable, and in the other stages unnecessary. After incising, one should keep the parts clean and use the iodine treatment as described. In the vestibule one meets the discharge again, and upon further examination the urethra may be discovered to be the next seat of trouble. In this case there are also various stages. Involvement of the urethra is a most troublesome complication. Morgagni's lacunæ, Littré's glands and Skene's glands are often affected. The burning upon urination is ofttimes severe, and this may be the most distressing subjective manifestation in the early stage. Many cases of gonorrhea, though appearing to the uninitiated practically cured, continue to produce a discharge. It is often found that this discharge, or leucorrhea, comes from the glands referred to. If the glands of Skene are the offenders, as is true only too frequently, then relief and cure can only be had by removing them. As to the other glands, dilatation, massage, energetic use of sounds, with boric acid and silver nitrate in the percentage stated above, constitute the only rational treatment. While these precise solutions are not the only ones that can be used, in the practice of the author they have given the best results.

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Carefully inserting the bivalve speculum or the fingers so disposed as to act like a bivalve, the vagina is next explored. Acute or chronic mucous membrane inflammation may be present. It is usually in the infant only that one finds much evidence of vaginal involvement, but a discharge is often found covering the entire surface. In occasional instances complete destruction of the membrane takes place, and the walls are invaded. This occurs in most cases in the adult. In infants, on account of the hymen, it is necessary to use a catheter in order properly to treat the vaginitis. A solution giving good results is the 1:2000 potassium permanganate solution. Indeed, this is often a specific if used early enough. Nitrate of silver is used in chronic forms. As for the appearance of the mucous membrane in these cases, it is the same in all parts attacked. In the acute cases the mucous membrane is painful to the touch, swollen, edematous, smooth or papillary, and shiny or covered by exudate. In the chronic cases the above phenomena are less marked, and the discharge may alone remain.

The cervix then comes into view, and an endocervicitis with it. If this be acute, it is red, swollen, and covered by purulent matter. If chronic, the racemose glands are often involved. I believe that I was the first to call the attention of the profession to the fact that the glands of the cervix often contain gonococci. Bloodgood confirms this statement; he found them in the glands up to the sixth week. In a few cases I have found them as late as three months. Even after it is impossible to find the gonococci, one finds the glands purulent and giving out much discharge. In the acute cases potassium permanganate is much used, but later silver nitrate solution is indicated, locally applied. In endocervicitis douching is worthless for any purpose other than to keep the lower tract clean. In fact, douching by the patient in gonorrhea is a makeshift, and may do much damage in that valuable time is lost which should have been employed for local applications. It may also possibly drive up infected matter to another level. When the glands are the seat of trouble they often have to be destroyed. Pure lactic acid will do this, and when carefully injected by means of a hypodermic syringe it gives excellent results. If the glands are infected too deeply amputation or removal of the cervix is the only recourse.

The uterus, in an anatomical examination, is next examined. A plug of mucus in the cervix may be due to cervical gland infection, but at times it comes from the uterine cavity. Acute and perhaps chronic gonorrhea of the mucous membrane of the uterus exists. Personally, I doubt the existence of the chronic variety, because in removing the uterus I have never found chronic gonorrhea nor the germs of gonorrhea. Bloodgood states that the uterus drains itself free from gonorrhea in a few weeks. Still, the possibility of diseased utricular glands remains. The muscles may become invaded and an abscess may result. Gonococci pass directly through the uterus, cervix, and possibly the vagina. The lymphatics carry them to their end vessels, the lumbar, iliac and the inguinal, as previously described. The treatment of gonorrhea of the uterus, unless complicated by abscess deep in the muscle, surrounding parts or adnexa, does not require that anything be done to

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the uterus itself. Certainly the curette should not be used; in the belief of the author and many others this is a most unwise thing to do. Local douching and local applications to the lower tract, as described above, are warranted and advised.

The tubes opening as previously stated may become the next victim, acutely, chronically, or purulently. The isthmus is rarely found troubled later than a few weeks after the gonococci have passed through it. It is therefore rarely discovered in an inflamed condition. It is the middle portion of the tube (receptaculum seminis) that presents the damage and that exemplifies gonorrheal destruction in all its phases—acute inflammation, pus, and destruction of its walls in part and then in whole. The inflammation may subside and leave but little residual evidence, or the tube may become the seat of fluid distention or abscess. If such be the case, in the acute phase rest in bed, sedatives and proper treatment of other parts infected are very advisable. In case of destruction or abscess, removal is the only justifiable mode of procedure after the acute stage has passed.

If the gonococci reach the ovary through the fimbriated extremity, which often becomes diseased by way of the canal, the ovary is then subject to their invasion and effects. The covering of the ovary, the ovisacs, and the Graafian follicles show an acute or chronic affection. The ovary remains enlarged or the connective tissue contracts the ovary and it becomes very small. An abscess, cyst or papillary infection may result. When the ovary is thus diseased, its removal is the safe and sane procedure, but one must always wait until the acute stage is over, unless one is positive that an abscess is about to rupture.

When the gonococcus is carried through the lymphatics and lodges in its end lymphatic vessels or along their course, rest must be insisted upon. If an abscess result it is to be treated by incision or complete removal according to its location.

If by any path, through the lymphatics, through the vagina, cervix, uterus, tubes, directly through the ostium abdominale, or the walls of the same, the peritoneum is reached, there develops peritonitis, acute or chronic. For the acute form, rest in bed, warm applications, sedatives, and treatment of the other parts as detailed, are advised. Later only is it advisable to disturb this infection. Adhesions, pus cavities, broad ligament involvement, lymphatic involvement, vessel involvement, and parametric involvement may result. The removal of all diseased tissue is strongly advocated. All adhesions to bowels and surrounding parts should be broken up. When the adnexa are infected menstruation, abortion, and irritation, in whatever manner produced, will start up the gonorrheal process anew. If all diseased parts have not been removed, death may be the result.

Vaccines have been recommended, but their use is as yet limited, and except in a very few cases they have given me but little result. The cases in which they were used were of gonorrheal inflammation, renewed by irritation and abortion. In most other conditions due to gonorrhea I believe the treatment advised in this paper superior. Except that irritation of the

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kidneys is produced I know of no reason why vaccines could not be used in conjunction with other treatment, but I do not find them necessary, and therefore at this time do not advise them.

This paper must call forcibly to our minds several points:—

1. The ready access, anatomically, of the gonococci to the female genital organs, from the labia to the peritoneum.

2. If the local parts are not completely cured a carrier may result.

3. The contagiousness of the disease.

4. The spread of the disease.

5. The necessity of local treatment by the physician.

6. Absolute rest in the acute varieties and absolute removal of all diseased parts in the chronic condition.

7. Removal of tubes, ovaries, peritoneum covering diseased parts, and uterus completely when the cervix is affected; all diseased glands to be removed, all strictures dilated, and all follicles incised or taken out.

8. Lay people should be warned as to the character of this disease and its result.

Cyclopedia of Current Literature

ACROMION PROCESS, AUSCULTATION AT THE.

Auscultation at the acromial ends of the clavicles is considered by the author of sufficient importance to deserve a recognized place in physical diagnosis. The bell of the stethoscope must be so adjusted that there is perfect adaptation between instrument and bone, and frequently, in order to insure this, the acromion process of the scapula must be covered as well as the acromial end of the clavicle. This done, the patient is told to breathe, count, whisper or cough, whichever sign one is endeavoring to bring out.

Normally, the right apex is characterized by bronchovesicular breathing, distinct spoken voice, and clear whispered sound; the left apex, by vesicular breathing, indistinct spoken voice, and muffled whispered sound. Acromial auscultation strikingly emphasizes these differences.

When there is very early infiltration of the right apex, acromial auscultation will yield an appreciable, prolonged expiratory sound, a louder spoken voice, and a slightly increased whispered sound. These changes may not at all be heard through direct auscultation over the apex, the acromion process thus being the first to give warning of apical disease. First stage tuberculosis of the right apex will reveal through auscultation of the acromial end of the clavicle tubular breathing, bronchophony, and whispered pectoriloquy—signs which, when found over lung tissue, would indicate absolute consolidation. In other words, the acoustic phenomena usual in first-stage apical tuberculosis are greatly exaggerated and made unmistakably evident.

In incipiency of the left apex, breathing conducted through the acromial end of the clavicle becomes pronouncedly bronchovesicular, and an increase in

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voice and whispered sounds becomes noticeable, while the same changes are but with difficulty perceived by auscultating the apex itself. In the first stage the same phenomena are observed at the left as at the right apex.

These findings are so common and characteristic that the author often begins auscultation of the apices at the acromion processes. The method is of great value in the case of a tuberculous focus lodged under or behind a clavicle. The usual procedure, in this event, is to percuss the clavicle in order to ascertain the presence or absence of bony resonance. Auscultation above or below the clavicle is of no value. Acromial auscultation, however, gives fair and frequently indubitable evidence of a lesion. The clavicles seem to pick up the sounds, whatever they are, and carry them to their acromial extremities.

Of still greater utility is acromial auscultation in revealing crepitant, subcrepitant, mucous or sibilant râles when one or all of these are either missed by the stethoscope when held over the apices or are indistinct.

Frequently, when apical tuberculosis is suspected, the patient is asked to cough and breathe while auscultation over the apex is carried on, in order to bring localized râles within the scope of hearing. Acromial auscultation will make such râles much more perceptible. Patients with deep voices and large laryngeal capacities, however, are poor subjects for acromial auscultation, the great volume of their voice and breathing sounds imparting a large part of them to the clavicle, which leads to confusion at the acromial end of the bone. Robert Abrahams (New York State Journal of Medicine, June, 1913).

APPENDICITIS, DIAGNOSIS OF CHRONIC.

While there is no doubt that pressure at McBurney's point is of great value in the diagnosis of appendicitis, the sign fails at times. There exist frank cases, usually subacute or those with a small abscess, in which the tenderness is situated lower than would correspond sharply to McBurney's point, the cecum being much lower than usual. This is particularly true in cases of chronic appendicitis, where all that may be useful in the way of physical examination is tenderness localized at the appendix.

For the purpose of assisting in the diagnosis of this condition, the author proceeds thus: If the patient is not too stout the lower border of the cecum is percussed for from Poupart's ligament upward. Fortunately the cecum is usually distended with gas, and its level, with the patient lying on his back, can be accurately determined. After this, percussion transversely across the cecum is made, to obtain its outer and inner edges. The outer can always be ascertained, and in percussing for it it is necessary that the percussion stroke be directed straight backward toward the side of the body, while when percussing for the inner the stroke should be made directly backward toward the junction of the psoas and iliacus muscles at that area. With an estimation of about where the appendix would be as judged from the location of the lower end and sides of the cecum, pressure on the abdomen should be made at that point.

When the cecum cannot be mapped out by percussion or the subject is well developed, and even in all, a second plan is to note the position of the right edge of the rectus muscle on the umbilical-spine line, marking the site with

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a finger. Having the patient rise to a sitting position helps in palpating for the rectus edge. Standing at the right and facing the patient (for right-handed individuals) the thumb is placed vertically on the abdomen, the tip of the thumb pointing to the ensiform, and the thumb is slowly pressed backward directly into the abdomen. When it has been sunk about halfway down to the back of the abdominal cavity, it is swung to the right of the patient at a right angle to the line of previous pressure. This pinches the appendix against the iliacus muscle and unyielding structures under and at the side of it, and usually elicits pain or tenderness. It is well, having done this in the mid-distance between the anterior superior spine and the umbilicus, and not having obtained tenderness, to move the thumb down about one-half inch and test again; and so on downward until one has reached almost to the brim of the pelvis. The same procedure performed on the left side serves as a control. By means of this method of downward, followed by right lateral, pressure it is possible to elicit tenderness in the average case of chronic appendicitis. When tenderness is obtained on transverse pressure to the left it may be due to a Lane kink, and when below it may be due to a tender ovary instead of the appendix. Anthony Bassler (American Journal of the Medical Sciences, August, 1913).

BROMIDES, CIRCULATORY EFFECTS OF.

[An investigation of the action of bromides on the heart was undertaken by the authors, frogs being used as well as the isolated hearts of warm-blooded animals. They examined the variations in the heart reaction to neutral solutions in which bromide salts were substituted in isotonic concentrations for chloride salts, *i.e.*, in both physiological saline and Ringer's solution, bromides were substituted for chlorides. With the bromide physiological saline (a solution of sodium bromide) the observed cycle of heart changes was almost identical with that of the chloride solution, though there was a constant slightly greater rate in the initial stage of bromide perfusion, with a somewhat greater depression in the later stages, *i.e.*, the toxic influence, if it can be so called, was a trifle greater with the bromide perfusion. The experiments with the bromide Ringer solution showed a similar slight variation from the normal Ringer.

The warm-blooded heart (cat) was found more sensitive to the bromides than the cold-blooded. Of 13 experiments, 3 showed primary acceleration of the rate, as with the frog heart; the remaining experiments showed a primary depression in rate. In all experiments there was a depression of amplitude. In long-continued bromide perfusions, arrhythmia often set in. Thus to the hearts of warm-blooded animals the bromides are in the long run sharply depressant. In strictly physiologic balanced solutions they are relatively non-toxic to the cardiac muscle, but if they are used without reference to the physiologic balanced basis, the reactions of the heart are frequently misleading, not on account of the direct toxicity of the bromide ion, but through the influence of the base with which it is combined. This is particularly true of potassium bromide, and upon looking over the literature one must conclude that many of the so-called bromide therapeutic effects are distinctly due to the base (metal) with which the bromide has been com-

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bined. C. W. Greene and T. K. Kruse (Journal of the American Medical Association, July 26, 1913).

ECZEMA, TREATMENT OF.

The practitioner must relinquish, the author asserts, the false idea that washing and cleansing of an eczematous surface is injurious. Eczematous areas must be cleansed and kept aseptic, as well as possible, just like any other inflamed or suppurating surface. Purulent secretion remaining on the excoriated surface of the skin is exceedingly irritating and causes the eczema to become more angry and spread to the contiguous skin.

Internal specific treatment for eczema does not exist. The patient must be studied as regards his gastrointestinal functions and general nutrition. If he is a dyspeptic, his stomach must be assisted with alkaline mineral waters or antidyspeptic remedies. Where the general nutrition is poor, good meat and ferruginous preparations constitute the base of the treatment. The treatment by staphylococcic vaccine, recently introduced, has given no results in the author's hands.

The local external treatment is the key to success. Acute eczema has to be treated like any other dermatitis. Applications of aluminum subacetate, 2 per cent. in solution, and dusting of the surface with amylum powder, are required. For vesicular eczema, liniments with zinc carbonate or with ichthyol are very beneficial. In recurrent vesicular eczema painting the surface with tincture of iodine, as is done to sterilize the skin in surgical operations, and then covering with a paste of zinc oxide, has given very good results. Rhagades must be touched up with silver nitrate (from 3 to 5 per cent.), to bring them to recovery. A. Ravogli (Lancet-Clinic, February 8, 1913).

GONORRHEAL RHEUMATISM, MASSAGE IN.

Massage of gonorrheal rheumatic joints, beginning only about two weeks after the start of the disease, is strongly recommended by the author. The danger of general infection is *nil*, as it has been shown that the gonococci themselves are dead about one week after the beginning of the affection, the changes around the joint being due to their toxins. The massage must be practised by the physician only, and with the cooperation of the patient. One must follow unconditionally the rule that the massage should not cause more pain than can be easily borne by the patient. Only effleurage is permissible. The pain caused by the first strokes soon becomes less, and only then can the pressure be increased. Thus one gradually relieves the pain and produces a comfortable condition.

The extremity must be well supported during the massage, and the skin covered with petrolatum in order the more easily to avoid strong friction. The massage can be given with the whole hand, as the larger the part is, on which a certain degree of pressure is used, the less the mechanical stimulation. The patient experiences immediate relief, though it does not always last long in the first days. The treatment should be given at least once each day. Between treatments the joints may be kept in a starch bandage, covered as long as is necessary to protect them.

Passive motions should be commenced as soon as the pain is sufficiently relieved to permit of the patient's stand-

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ing them—after six or eight days, sometimes sooner. The aim is to prevent the formation of adhesions, or, at least, to keep them within limits. In most of these cases, even such joints ordinarily become stiff as are not affected by the disease proper, *e.g.*, the finger-joints in rheumatism of the wrist; the stiffness of these joints can always be avoided

Hot-air treatment and active arterial hyperemia are contraindicated in the early stages; they increase the swelling and pain. On the other hand, the good influences of passive hyperemia produced by the Bier bandage are well known. One must, of course, not neglect the original disease. Most of these patients suffer from prostatic inflammation, to which recurring affections of various joints are often due. The prostate must be given massage if a lasting result is to be obtained. Serum or vaccine should be given conjointly. H. F. Wolf (New York State Journal of Medicine, July, 1913).

HEART DISEASE, USE OF SUGAR IN.

From inquiries made by the author, cardiac cases with edema, cases with anginal pains, and cases where cardiac disease is secondary to renal disease do not seem to be improved by the ingestion of sugar. In a case of general paresis in which the pulse was failing, the author did not find it to have any effect. In another case, however, he believes that the patient's life was saved by it. A woman, aged 77 years, who had had pulse irregularity for some years, developed a bad heart attack, with rapid, irregular, feeble pulse, cyanosis, and attacks of paroxysmal breathing. There was no edema. Inhalation of amyl nitrite gave temporary relief, but the condition then continued for some days, the patient steadily getting worse in spite of digitalis, strychnine, dry cupping, leeching, and frequent inhalations of oxygen. One day she seemed to be dying; in the evening it appeared doubtful if she would live through the night. The author ordered some lumps of ordinary white sugar to be given in milk, and added some syrup to the patient's medicine, instructing the attendants to give her 4 ounces (120 Gm.) of sugar during the night. In the morning the patient was found very weak, but less cyanosed and with a stronger, slower pulse. Digitalis had been omitted, as well as digitalin, as these had not had any effect. Four ounces of sugar were ordered during the ensuing twelve hours, and after that it was continued in smaller quantities for some weeks. The patient made slow but steady improvement. She gained strength, and at the time of writing was able to go out into the garden for a few minutes and to walk up and down stairs. S. E. Denyer (Lancet, April 19, 1913).

HEPATIC CIRRHOSIS, TREATMENT OF.

Cirrhosis of the liver can sometimes be successfully treated without surgery, and, even when extensive, it may be compatible with apparent health as long as the hepatic functions are well maintained. The fatality of the disease does not depend upon the degree of the cirrhosis. One must not only think of the condition as an anatomic change in the liver, but also as a state of disturbed function and intoxication, and treatment must be directed to these. Through experience with renal diseases the author has become convinced that coincident hepatic inactivity often precipitates dangerous and fatal intoxication by toxins or infectious matter in

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the gastrointestinal tract, and that the success of the treatment of kidney disease by milk and free catharsis is due more to the effects produced on the liver and intestines than directly on the kidneys. He therefore resolved to try the same treatment in hepatic cirrhosis, and owing to a suspicion of chronic infection of this organ, also to experiment with hexamethylenamine. Four cases, all with ascites and other characteristic symptoms, are reported which were improved or apparently cured by a limited milk diet of only 6 glassfuls, medical treatment, and the insurance of regular bowel movements. Alcoholic beverages must be absolutely forbidden both during treatment and after its discontinuance. When improvement begins to be apparent the amount of milk may be increased from 6 to 8 glassfuls a day, and later fruit may be allowed. The variety of food is to be later otherwise increased, but a milk or almost exclusive milk diet should be continued for at least two months, and a light diet of simple kinds of food directed afterward. That the hexamethylenamine contributed materially to the improvement of the author's cases seemed doubtful. N. S. Davis, Jr. (Journal of the American Medical Association, July 26, 1913).

LUMINAL, TOXIC EFFECTS FROM.

The author publishes an account of 2 cases showing toxic effects on the part of the new hypnotic, luminal (phenylethylbarbituric acid). In one case, a young woman of 24 had been given 5 grains (0.3 Gm.) of the drug, not to be repeated for forty-eight hours, which proved ineffectual in producing the sleep desired. She therefore took a second dose the next evening, twenty-four hours after the first, and slept very soundly all night and until 10 the next morning. Upon awaking she presented scanning speech, paraphasia, ataxia and astasia, together with somnolence, all of which persisted for about twelve hours. The pupils were dilated and the knee-jerks diminished. There were no sensory disturbances.

In the second case a man had been given 10 grains (0.6 Gm.) and been told to repeat in one hour with 5 grains (0.3 Gm. Three hours later he was still awake and was given 3 grains (0.2 Gm.) of veronal. He went to sleep about 4 A.M. and had to be awakened at 10. He then showed the same symptoms as the first case—if anything more marked—and also gastrointestinal disturbances. This condition lasted for forty-eight hours, when gradual return to normal took place. Attention is called to the large size of the doses given in these 2 cases—in the first equalling the maximum amount recommended and in the second exceeding it. F. J. Farnell (Journal of the American Medical Association, July 19, 1913).

PERINEUM, REPAIR OF.

The author advocates immediate repair of the torn perineum. The procedure which has yielded most successful results in his hands has been as follows: The patient is placed on her back, with the thighs flexed on the left abdomen and held in place with a suitable support like the Robb-Kelly strap. The vagina is cleansed of the clots and its upper part packed with sterile gauze or cotton, to make the field of operation as bloodless as possible. Then a good light is thrown into the vagina. As recommended by Robbins, the mucous membrane and submucous fascia of the vagina are sutured to the mucous membrane and submucous fascia of the opposite side of the tear

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with a continuous chromicized catgut suture, which begins at the upper part of the tear in the vagina and is continued on down toward the vulva. Uniting the mucous membrane and fascia with a continuous running suture, the operator tries to match the part of one side to that from which it has been torn. This restores the shape of the vagina. After the vulva has been reached the suture and needle are laid in the vagina, to be used later to unite the skin with a continuous suture. If there happens to be another tear in the vaginal sulcus or median line, as is almost always the case after the use of forceps, that tear is similarly sewed with a continuous suture, and when the vulva is reached the suture is temporarily laid aside. Then the crown sutures of silkworm gut are put in from the skin surface, slanting downward, but the rectum should not be entered, as sometimes happens, unless one takes care to feel in the rectum with a gloved hand. It is well to put the wound well forward with the sutures before tying, to see that the perineum is well cared for; they are then tied. The catgut suture that was stopped at the opening of the vulva is then picked up and with a continuous suture the denuded surfaces are brought into apposition and the suture continued down the skin. If the rectum has been torn the sphincter may be caught and brought together by a silkworm-gut suture introduced in the skin just above the rectum, passing through the muscle and out at the other side through the skin. A similar suture just above the mucous membrane of the rectum, introduced from the skin, passing around the tear in the rectum, and coming out on the skin of the opposite side, will draw the mucous membrane down like a purse-string. G. Baughman (Journal of the American Medical Association, February 1, 1913).

PERNICIOUS ANEMIA, ETIOLOGY OF.

The relations of gastric disturbances and the gastric bacterial flora to pernicious anemia are discussed by the author. He refers to the fact that the bacterial flora present in the stomach in cases of achlorhydria hemorrhagica, achylia gastrica and pernicious anemia are identical. The following facts having regard to the causation of this affection are presented for consideration by the author:—

Achlorhydria is merely a symptom denoting a marked degree of chronic gastritis, and is usually evoked through extragastric irritative factors often capable of correction. There are, without exception, present in such stomachs great numbers of bacteria ordinarily considered pathogenic, especially streptococci. Practically all recorded cases of authenticated pernicious anemia show achlorhydria, and in the author's series of 34 cases occult blood was found in the stomach extract. In a few cases these changes were known present at least one year before any blood changes were to be noted. In others paresthesias were present some time previous to blood impairment, and many had suffered for years from chronic gastrointestinal complaints.

Eighty per cent. of cases of pernicious anemia have increased temperature some time during the course of the disease. Pure cultures of streptococci have been found by competent observers in the blood of pernicious anemia patients who were running a fever. Bacterial hemolysins are known to produce anemia resembling the pernicious type, as are other toxic substances, among which may be classed the lipoid

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group. Efforts directed to the control of bacterial growth in the body and particularly in the gastrointestinal tract have caused complete remissions in this disease in some instances. Possibly all means employed in treating pernicious anemia have been unconsciously working empirically to effect the same result, viz., the cleansing of the gastrointestinal tract by medicines which we have lately learned to be germicidal in their action. Thus intestinal lavage, appendicostomy with colonic irrigation, intestinal antiseptics, gastric lavage, thorough evacuation of the bowels, arsenic in its various forms, as Fowler's solution and intravenous injections of salvarsan, autogenous vaccines, and finally hydrochloric acid.

The phenomena of occurrence, remission, and re-occurrence of the blood-picture characteristic of pernicious anemia may be explained by our present knowledge of the action of toxins from whatever source, impairing the formation of antibodies until a bacteremia is produced which may be clinically recognized. J. T. Pilcher (American Journal of the Medical Sciences, August, 1913).

PITUITARY BODY, FUNCTIONS OF.

The anterior and posterior lobes of the pituitary appear to serve different functions, the anterior lobe being related to the general growth of the body, and especially of the skeleton, while the posterior lobe, which includes the *pars intermedia*, probably serves to promote the contractility and increase the tone of plain muscular tissue generally, as well as of the heart, and to excite the activity of certain glands, viz., the kidney and mammary gland.

It is probable that the gland produces its action by means of chemical agents or hormones which pass either directly or indirectly into the blood, and through this fluid influence other and distant organs. In the case of the *pars anterior* no such hormone has hitherto been separated. But there is reason to believe that the influence of this part of the gland on growth is not produced through nerves; for in the first place the pituitary receives but few nerve-fibers, and such as there are mainly go to the blood-vessels; and secondly, it is difficult to explain the effect of hyperplasia of the *pars anterior* in producing the hypertrophy of the skeleton which occurs in giants and acromegalics otherwise than by assuming that the enlarged gland is giving to the blood a greater amount than normal of a hormone which stimulates the growth of the skeleton, and probably of connective tissue generally. Such a hormone doubtless passes directly into the sinusoidal capillaries from the gland cells, which are sometimes arranged around the capillaries like the epithelium of an ordinary gland around its alveoli and ducts.

In the case of the *pars intermedia* and *pars nervosa* a definite hormone can be obtained in solution. The hormone from the posterior lobe resembles in some of its effects that obtained from the medulla of the suprarenal capsules, but it is both chemically and physiologically a different body, appearing to act directly upon the protoplasm of cells and not, as in the case of the suprarenal hormone, upon that portion of the cell with which the sympathetic fibers are connected. It is at present uncertain whether there is only one hormone present in the saline extract of the posterior lobe. It is, however, probable that the effects upon secretion are brought about by a different agent or agents from that which causes contraction of involuntary muscle.

The hormone or hormones of the

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posterior lobe appear to be formed from certain cells of the *pars intermedia,* which undergo enlargement and degeneration into hyaline and granular bodies. These bodies push their way or are forced through the interstices of the neuroglial tissue of the *pars nervosa,* where many of them break down into a hyaline material and granules; they eventually pass bodily into the infundibulum of the third ventricle, where they are absorbed by the cerebrospinal fluid. It is probably in this way and, therefore, by an indirect path, that the hormones of the posterior lobe get into the vascular system.

Some relationship appears to exist between the thyroid gland and the pituitary. This is indicated by the enlargement of the pituitary and formation in it of colloid-containing vesicles after removal or atrophy of the thyroid. If this relationship indicates a vicarious nature in the functions of these organs it is probably one which is limited to the production of the hormones which affect nutrition, especially that of the connective tissues, since these tissues are known to be influenced by changes both of the thyroid and of the *pars anterior* of the pituitary. But that other tissues may also be influenced is evidenced by the symptoms produced on removal or destruction of either gland, prominent among these being defects of the nervous system. E. A. Schäfer (Proceedings of the Royal Society of Medicine, May, 1913).

PNEUMONIA, VACCINE TREATMENT IN.

Having seen severe cases of pneumonia die without the slightest amelioration of their symptoms by any treatment used, the author determined to make a trial of vaccine therapy, and the results obtained in his small series of 13 cases were so good that, in conjunction with the reports of others, he is led to believe that in this treatment there is available something that will greatly assist the practitioner in combating the dreaded disease. Of 6 cases treated merely symptomatically 2 died, whereas of the 13 cases given vaccines none succumbed. At first a personally prepared vaccine, and later a stock vaccine, was used. No attempt was made to obtain autogenous vaccine, the heterogenous variety proving so satisfactory.

The vaccine treatment should be begun as soon as the diagnosis is made. Where delay occurs the success of the treatment is not so immediate and complete. The dosage is regulated on a sliding scale. An injection of 50 million bacteria is, in most cases, sufficient as an initial dose, but some sthenic cases will respond more favorably to larger doses, up to possibly 150 million. All subsequent injections should be increased rapidly, 100 million being given on the second day, 200 million on the third, etc. The clinical picture should govern, however, the amount used, and to err on the side of excess is as detrimental as to give too little. The primary injection having been administered immediately after the diagnosis is made, on the following day, if the patient improves, no treatment is necessary; but if the temperature remains high and the case is sthenic, an increased amount may be given at this time. On the third day, if the patient does not show sufficient abatement of the symptoms, another inoculation is made.

Immediate fall of temperature after the injection of each dose of the vaccine, together with the marked relief from the distressing symptoms, such as pain and dyspnea, were observed in the author's cases. None of the patients

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given vaccines received other treatment, though stimulants were administered when thought necessary. W. N. Bispham (Military Surgeon, June, 1913).

POSTANESTHETIC ADMINISTRATION OF GLUCOSE.

Anesthesia causes a sudden drain on the reserve supply of glycogen in the system. If the patient be not suitably fed, he begins to live at the expense of reserve fats and, to some extent, proteins. These are imperfectly oxidized, and the intermediate products resulting from incomplete oxidation are toxic. The liver, upon which develops the task of neutralizing these toxic substances, is in a state of general functional inferiority owing to the lack of glycogen. From this the authors conclude that in order to combat postanesthetic intoxications, carbohydrates must be supplied to the organism, both for prophylactic and curative purposes. Glucose (grape-sugar) which is directly absorbable, is the food of choice for operated individuals. In order to facilitate its ingestion in sufficient amount, the following combination is prescribed by the authors:—

℞ Glucose, ʒv (150 Gm.).
Tincture of nux vomica, ♏viij (0.5 Gm.).
Tincture of cinnamon, ♏L (3 Gm.).
Water, enough to make ʒx (300 c.c.).
M.

This is to be taken in dessertspoonful doses every half-hour. Vomiting is not only not induced, but is arrested, by this solution. Where toxic disturbances have already appeared, glucose should be given freely by all routes: orally, rectally and even intravenously. Alkalies should also be administered, in conformity with the prevailing practice in diabetic coma. Chauvin and Œconomos (Société de thérapeutique, Paris; Tribune médicale, March, 1913).

POTASSIUM CYANIDE POISONING, TREATMENT OF.

Experiments performed by the author in rabbits showed that when 4 to 5 c.c. of a 1:10,000 solution of epinephrin per kilogram of body weight is introduced in an animal's stomach either with or subsequently to the administration of a lethal dose of potassium cyanide (0.01 Gm. per kilo.), life is prolonged, and that if the epinephrin solution is given within five minutes after the poison, and Martin and O'Brien's antidote given, or the stomach washed out within four or five minutes after the administration of epinephrin, the animal's life is saved. The epinephrin serves merely to delay the absorption of the poison, principally by its vasoconstrictor action on the vessels of the mucosa.

Calculating the dose suitable for man from the ratio of the area of his stomach to that of the rabbit, the author states that the amount used should be about 90 c.c. (3 ounces) of the 1:10,000 solution, followed afterward by about 50 c.c. (1⅔ ounces). The following procedure is advised in cases of cyanide poisoning: 1. Epinephrin to be immediately given. 2. Martin's antidote, if it be at hand. 3. Wash the stomach out. 4. Give more epinephrin. The object of the second dose is to retard the absorption of any of the poison which escapes the washing-out process or the antidote. It might also be advisable to give a brisk saline purge soon afterward. The Martin and O'Brien antidote is made by mixing 33 c.c. (8¾ drams) of a 23 per cent. solution of ferrous sulphate with 30 c.c. (1 ounce) of a 5 per cent. solution of potassium hydroxide and 2 Gm. (½ dram) of magnesia. The former two are to be kept in hermetically sealed vials and mixed before taking. When the Martin-O'Brien antidote is not at

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hand, the order of procedure should be: 1. Epinephrin. 2. Washing stomach out. 3. More epinephrin. Jona (British Medical Journal, February 8, 1913).

PUERPERAL INFECTION, ADVANCED TREATMENT OF.

The non-operative treatment of an uncomplicated case of puerperal infection is described by the author as follows: The patient should have complete physical and mental rest. A well-ventilated room should be selected in which there is plenty of sunshine. Drainage should be favored by the Fowler position. The hyperpyrexia should be controlled by cold sponging and an ice-bag on the head. In the case of a local pelvic inflammation, an ice-bag should be applied over the affected area. Elimination by both bowels and kidneys should be favored. The drop method of introducing normal saline solution into the rectum is desirable.

Since it requires five days to make an autogenous vaccine, first a serum or antitoxin should be administered, to be followed by a reliable stock vaccine if the blood-count is favorable and there is an indication that the patient lacks sufficient reaction to combat the infection.

All useless medication, whisky, quinine, etc., should be avoided, and the stomach practically reserved for nourishment only. The patient should be fed carefully, at regular intervals. Breast-nursing should be discontinued unless the mental effect is too depressing in the mother's weakened condition.

Uterine curettage is to be recommended only for a hemorrhage, which indicates that there is a foreign body in the uterus. Under scopolamine and morphine, or a gas anesthetic, and with careful aseptic preparation, the operator wearing rubber gloves, the uterine cavity is explored and carefully cleaned out with gauze wrapped around the finger. The author cleans out the uterus if any of the placenta has been left after delivery, but the uterus should be left alone in the event of retention of the membranes.

Should a pelvic abscess develop, the indications are for an extraperitoneal drainage, preferably by the vaginal route, and under gas or scopolamine and morphine anesthesia.

The necessity of resisting the temptation to give vaginal and uterine douches in puerperal infection is emphasized by the author. The discharge, if any, should not be washed away with an antiseptic, as such a procedure inhibits the antiseptic action of the normal secretions and prevents phagocytosis. R. T. Gillmore (Journal of the American Medical Association, June 21, 1913).

PULMONARY TUBERCULOSIS, TREATMENT OF.

Combined tuberculin and guaiacol treatment is recommended by the author on the basis of experience in 126 cases. Following was the form of prescription for guaiacol mixture given in most cases, with or without guaiacol carbonate capsules:—

℞ Guaiacolis puri, gr. xxx-xl.
Quininæ hydrochloridi, gr. xx-xxv.
Alcoholis, ℥ij.
Tincturæ gentianæ compositæ, ℥iij.
Aquæ, q. s. ad ℥viij.

M. Sig.: Half a teaspoonful gradually increased to 2 teaspoonfuls to be given, well diluted with water, three times daily, after meals.

The small dose of guaiacol thus administered was increased gradually by the addition of guaiacol carbonate. The guaiacol itself was given in alcohol because it was found to agree better with

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the stomach when thus dissolved and subsequently diluted with water.

The tuberculin was in all cases Koch's new tuberculin—T. R. The initial dose was a small one ($\frac{1}{100,000}$ mgm. or $\frac{1}{80,000}$ mgm.) in the majority of cases. This was followed three or four days later with from $\frac{1}{80,000}$ to $\frac{1}{60,000}$ mgm., according to the previous dose and provided all general reaction had ceased if there had been any. Three or four days later the dose was increased by another $\frac{1}{20,000}$ mgm. and so on, the temperature being invariably taken on the same evening as well as in the afternoon and evening of the two following days, and if there was the slightest rise above the normal the dose was not increased the fourth day. Subsequently the temperatures were taken every two or three hours.

Recently the method of tuberculin treatment above described was replaced by the German intensive treatment of doubling the dose every four days when no rise of temperature followed the previous dose, and ultimately going on to the larger doses of 1, 2, and 4 mgm. up to ½ c.c. of T. R. The results have been better than by the old method. I. C. Voight (Lancet, March 1, 1913).

RECTAL FEEDING.

The older observations on the absorption of foodstuffs from rectal enemas, based on the analysis of rectal "washouts," have been found by the authors to be unreliable. The daily output of nitrogen in the urine of patients given nutrient enemas of milk or eggs peptonized for twenty or thirty minutes demonstrates that almost no nitrogenous matter is absorbed. The failure of the rectum to absorb ordinary nutrient enemas is largely due to the fact that peptones are given instead of amino-acids. Chemically prepared amino-acids, or milk pancreatized twenty-four hours, so that amino-acids are separated, allows of a much better absorption of nitrogenous foodstuffs from the rectum, as was demonstrated in 5 cases by the high nitrogen output in the urine. Dextrose is much better absorbed than lactose, and relieves the acidosis of starvation. Fat is not well absorbed; scarcely any of the fat of ordinary milk enemas is retained. The best nutrient enema consists of milk pancreatized for twenty-four hours, with 5 per cent. of pure dextrose. A. Rendle Short and H. W. Bywaters (British Medical Journal, June 28, 1913).

SCIATICA, TREATMENT OF.

When a case of sciatica has not been relieved by proper medical treatment, and especially when the patient is free from pain while resting in bed, but pain is brought on again by movements of the thigh, the nerve should be exposed by incision and examined for adhesions. Small adhesions may disappear, but large and numerous adhesions will not. In all cases of perineuritis with many and large adhesions there must always be a certain amount of neuritis due to dragging upon the nerve by adhesions, but this subsides after operation. Nerve stretching can only prove of value by breaking up adhesions and, as can readily be understood, it is only in the case of very small and slight adhesions that any benefit can be expected. In the presence of large and numerous adhesions nothing short of a careful dissection with a knife can offer any possible relief. This operation does not expose the patient to serious risks and offers great chance of permanent improvement. M. J. Lewis and W. J. Taylor (Therapeutic Gazette, June, 1913).

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TETANUS, TREATMENT OF.

A case of tetanus in an emaciated boy aged 19 years, in which treatment by intravenous injections of paraldehyde, ether and saline solution was employed with good results, is reported by the author. On the same day on which the patient developed definite signs of tetanus, a solution of paraldehyde and ether, 5 c.c. of each in 150 c.c. of normal saline solution, was infused intravenously by thrusting a sharp needle through the skin into one of the veins. Deep anesthesia was produced. Normal saline solution was then given, and finally another 150 c.c. of the same strength paraldehyde and ether solution. In all 2 liters of fluid were passed into the vein. The patient slept and then remained comfortable and relaxed for a number of hours. Later he became again rigid, but had no spasms and slept through the night. On the succeeding eight days the spasms were kept under control, sleep procured, and feeding with milk rendered possible by similar injections, the amount of paraldehyde and ether being raised, however, to 15 c.c. of each, and even, at the last, to 30 c.c. After this period the patient gradually recovered from the tendency to rigidity, all tetanic symptoms having disappeared on the seventeenth day.

The patient suffered very little of the pain which is usually experienced by tetanus cases, and during the period of tetanic symptoms his strength and nutrition were well maintained. Among the advantages of the treatment is that the anesthesia is induced with extreme rapidity. Within a few seconds from the introduction of the needle the muscles become relaxed and no further pain is experienced. After the period of hypnosis has elapsed, there remains an interval of relative muscular relaxation lasting several hours, during which nourishment can be administered and the nursing, etc., of the patient attended to. In future cases the author intends to use the larger doses of paraldehyde and ether from the beginning, in order to insure rest as complete as possible. Oliver Atkey (Lancet, January 18, 1913).

TOXEMIA OF PREGNANCY, TREATMENT OF.

When the shock and trauma of forced delivery are imposed upon a nervous system already reacting to toxemic irritation, the *coup de grace* is not infrequently given, in the author's opinion, to women who under more conservative treatment might recover. Under successfully applied eliminative treatment, moreover, the cervix and lower uterine segment often soften and expand so that the woman speedily delivers herself under the usually exaggerated uterine contractions of the convulsive attack, or sufficiently to permit of delivery without undue shock or injury. The author is thus an advocate of conservative treatment in most of these cases. The first measure he employs is to give a high compound enema of:—

℞ Oil of turpentine, ʒj (4 c.c.).
Extract of aloes, gr. xx (1.3 Gm.).
White of egg, j;
Magnesium sulphate,
Glycerin,
Water, of each, ℥ij (60 c.c.).

The patient is then given, when feasible, a hot-water immersion bath. This need generally not be continued for more than a few minutes before perspiration appears on the forehead. If the patient is visibly dirty, or if sweating does not soon occur, the use of a flesh-brush will promote skin activity. If the pulse is weak, a stimulant is indicated before the bath. The woman is then rolled in a

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blanket, placed in a warmed bed, laid on a rubber blanket covered with a sheet, and another rubber blanket is spread over the extra blankets covering her. This treatment not infrequently induces labor. In the presence of convulsions the hot, wet pack is made use of. An ice-bag is applied to the head. If the patient is comatose the stomach is washed out and there is left therein a moderate amount of water, perhaps 8 ounces (250 c.c.), containing 2 ounces (60 Gm.) of Epsom salt or a like amount of castor oil, with 2 drops of croton oil.

In the presence of marked edema it is not well to give much water at first; otherwise, the conscious patient should be caused to drink freely, and potassium bitartrate or acetate may be given to neutralize acidosis. Fluid in the form of salt solution should be given to the unconscious patient, 1 or 2 pints (500 to 1000 c.c.) under the breasts, in the face of free diaphoresis and purgation; by this intake and outgo of liquids the blood may be effectively washed of its toxins. Nitroglycerin in $\frac{1}{100}$ grain doses is sometimes valuable to relieve blood tension and promote diaphoresis; but generally the blood tension is sufficiently reduced by the active functioning of skin and bowels. To control convulsions and nervous restlessness, morphine is used. In the event of a living, viable fetus, and in order not to inhibit uterine contractions, the drug is given in doses generally not exceeding $\frac{1}{4}$ grain (0.015 Gm.) with subsequent $\frac{1}{6}$ grain (0.01 Gm.) doses at two-hour intervals.

If labor is not excited by the eliminative treatment, and the toxemia and convulsions abate, pregnancy is allowed to continue, especially when the fetus is alive and not yet viable; if the fetus is dead, spontaneous delivery is generally awaited. In chronic nephritis, however, labor is usually induced not later than the end of the eighth month. When under eliminative treatment labor begins; as soon as the cervix is softened, effaced and a little dilated, hydrostatic bags are used; the labor terminates unaided or, more generally, is completed with forceps or version and extraction. After delivery, eliminative treatment is continued until convulsions cease and edema disappears. Sometimes there is free post-partum bleeding, and in the presence of a persisting high blood-pressure this is regarded as a favorable happening. Green (Boston Medical and Surgical Journal, March 13, 1913).

URETHRITIS, POTASSIUM PERMANGANATE IRRIGATIONS IN.

In irrigating the urethra in cases of subacute gonorrheal urethritis it was noticed by the author that the primary sensitiveness following injection soon disappeared after the use of permanganate irrigation. He was thus led to try this measure to reduce the urethral sensitiveness prior to the passage of sounds in a case of stricture. The experience showed that anesthesia of the mucous membrane of the urethra could be completely and satisfactorily produced by dilutions of potassium permanganate of 1: 2500 or 1: 5000, though it failed with higher dilutions. Experiments made on the external skin showed the substance to be entirely ineffective to produce desensitization, probably on account of the impossibility of its penetrating to the nerve-endings. The method just described, however, of producing anesthesia of the urethral and vesical mucous membranes, should be welcome to those obliged to perform painful manipulations of these organs. W. M. Barton (Journal of the American Medical Association, July 19, 1913).

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Clinical Summary

Practical hints from articles and abstracts that have appeared in the Monthly Cyclopedia and Medical Bulletin during the current year.

Acne. TREATMENT. 1. Following lotion advised: Zinci sulphatis, potassæ sulphuratæ, sulphuris præcipitati, of each 3j; aquæ, ℥iv; to be applied at night. 2. To keep open orifices of follicles, resorcinol in 10 to 15 per cent. paste, recommended. 3. If skin thick, sluggish and oily: Preliminary washing with tincture of green soap. 4. Warm water may be used after incising pustules, to favor bleeding, but for washing cold water is preferable. 5. X-rays of service (*a*) to increase local blood-supply and improve resistance; (*b*) to cause atrophy of sebaceous glands. 6. High-frequency current useful to reduce induration of nodular acne. 7. Massage or local manipulation, to facilitate drainage of ducts. 8. Dermal curet, when pustules cured and superficial epithelium somewhat macerated by resorcin. *Chipman.* Page 283

Actinomycosis. TREATMENT. X-ray treatment recommended in cases resisting customary iodide medication and recurring after operative intervention. *Levy.* 472

Adenitis, Tuberculous. TREATMENT. 1. Produce Bier hyperemia by applying elastic band about neck for a few hours before opening abscess. 2. Make very small straight incision into gland, evacuate contents with dull spoon, using no force, and, without washing or wiping out cavity, introduce a 2 to 4 per cent. solution of formaldehyde in glycerin, and seal incision. Primary healing results in 50 per cent. of cases; others are treated by further injections. 3. In cases of extensive involvement, prescribe enzymes of yeast internally. 4. In the few cases that do not respond satisfactorily, resort to radical operation. *Brown.* 303

Albuminuria. TREATMENT. Prophylactic doses of Roux's antidiphtheritic serum in 128 cases of scarlet fever found to lower greatly frequency of albuminuria in these cases. Anaphylactic effects extremely rare with this serum. In all cases of albuminuria originating from throat inflammation, as well as in albuminuria in general where other measures have proven ineffective, the serum should be given hypodermically in doses of 10 c.c. (2½ drams) every three or four days. *Galliot.* 36

Anal Fissure. TREATMENT. Conservative measures advocated in painful fissure. In examining for it have patient bear down, or blow in some orthoform. In treatment: 1. Apply thigenol on cotton on end of probe, which is then withdrawn, leaving cotton in position. 2. Patient to drink tumblerful of hot water an hour before breakfast, and another, either hot or cold, in evening. 3. To insure softness of motions: Tincture of cochineal and peppermint oil, of each, ♏x (0.6 c.c.); syrup of glycerin, 3j (4 c.c.); soft paraffin, ℥j (31 Gm.). If this objectionable, add 20 grains (1.3 Gm.) of powdered cocoa, or 10 to 20 grains of powdered agar. Dose of the mixture, 1 teaspoonful four times daily. 4. Where constipation previously present: Some aperient, such as confection of senna, 3ss-j (2-4 c.c.), to be given in addition. 5. After bowels act: Patient to wash parts and apply some bland ointment, *e.g.*, one of eucalyptus. 6. Where violent sphincteric spasm and pain, dilate under gas, and, if sentinel pile present, remove with forceps. *Baldwin.* 109

Anemia. TREATMENT. Administration of olive oil and glycerin, equal parts, in gradually increasing doses two hours after each meal considered a valuable measure. *Bram.* 47

Appendicitis, Acute. TREATMENT. After operation in children: 1. Give warm saline solution by rectum, 8 to 10 ounces every two or four hours; administer slowly with catheter and funnel. 2. Feed with a decoction of crushed raisins, alternated with albumin water. 3. Open bowels as soon as possible. If no normal movement within twenty-four hours, give glycerin enema; use syrup of senna as routine aperient. *Stiven.* 37

Appendicitis, Chronic. DIAGNOSIS. In cases of chronic appendicitis with digestive symptoms, induction of referred pain or distress in the epigastrium, left hypochondrium, umbilical, left inguinal, or precordial region by a continuous firm pressure over the appendix (McBurney's point) is a valuable test in deciding when and when not to recommend operation. *Aaron.* 283

Arteriosclerosis. TREATMENT. 1. Rest for whole body and particularly any organs specially involved in sclerotic process. 2. Diet such as will avoid all digestive disturbances. 3. Judicious restriction of fluids. 4. Systematic hydrotherapy, carbon dioxide baths or electric baths. 5. Iodides only where angina pectoris, syphilis, or eye affections due to sclerosis of retinal artery. 6. Diuretin, especially valuable in angina pectoris and tobacco heart; lowers blood-pressure markedly after some weeks' administration. *Von Noorden.* 346

Arthritis, Chronic. TREATMENT. Certain joint cases, rebellious to all other treatment, can be arrested by proper diet combined with colonic lavage. Breakfast: Cereal, small amount; toast with butter; imitation cereal coffee. Between breakfast and lunch: Buttermilk, 2 glasses; water, 1 glass. Lunch: Clear soup (or lettuce or spinach); 1 roast

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potato; 2 slices toast; imitation coffee. Between lunch and dnner: Buttermilk, 1 glass; water, 1 glass. Dinner: Clear soup (or twice a week small amount roast chicken, or 1 egg); toast or lettuce; imitation coffee; apple sauce. Between dinner and bedtime: Buttermilk and water. Daily simple enema followed by high colonic lavage with about 1½ quarts normal saline solution, until washings return fairly clear. Adapt diet to individual caloric needs and with constant regard to weight. *Pemberton.* Page 45

Arthritis, Gonorrheal. TREATMENT. A. Acute. 1. Sodium salicylate, 1 to 4 drams (4 to 6 Gm.) or acetyl salicylic acid, 20 to 30 or 40 grains (1.3 to 2.6 Gm.), freely diluted, during febrile stage. 2. Where intolerable pain and insomnia or threatening rupture of synovial membrane or subluxation, puncture, repeated if necessary, and active counterirritation. 3. In suppurative and grave forms, arthrotomy, either simple or followed by iodine or zinc chloride. 4. Passive movements and massage, when acute symptoms subsided. Other available measures: 5. Antigonococcic vaccines. 6. Antimeningococcic serum. 7. Autoserotherapy. 8. X-rays or radium in obstinate cases. 9. Bier's hyperemia. 10. Hot-air treatment especially; air in hot-air-box at 175° to 210° F., for one-half to one hour at a time. B. Chronic. Additional special measures: 1. Disinfection of genitourinary tract. 2. Thyroid substance, 2-grain (0.12 Gm.) cachets one to three times daily. 3. Fibrolysin injections, 30 minims (2 c.c.) daily for a fortnight, where joint deformity present. *Dardel.* 236

Arthritis, Rheumatoid. TREATMENT. Atophan found most efficient drug in relieving pain in a case of rheumatoid arthritis. *Kahlo.* 350

Asthma, Bronchial. TREATMENT. 1. When patient first seen during an attack, give 10 grains (0.6 Gm.) of blue mass or an equivalent amount of calomel with soda, followed by salts next morning. 2. Morphine and atropine injection, only if patient suffering intensely. 3. Sodium iodate, gr. iv-v (0.25-0.3 Gm.) every four to six hours, in capsules, given with food (contraindicated in the tuberculous, especially if hemoptysis). 4. Repeat mercurial purge if attack not markedly better in twenty-four hours. 5. Diet. During attacks: Broths every two to four hours. In intervals between attacks: Enough plain, coarse food to satisfy hunger and no more. Soups, clear of fat; fresh fish; raw oysters or clams; tender and lean meats; all vegetables except onions, cabbage, cucumbers, corn on cob; potatoes, peas, and beans only sparingly; only well-baked or toasted bread; rice, cereals, and eggs in moderation; no raw fruits; pastry, sweets, and any articles found by experience to disagree to be avoided. Careful scrutiny of patient's selection of foods required. Heaviest meal to be taken at noon; light supper. *Oettinger.* 37

Theobromine sodium salicylate (diuretin) found to do good in many cases. Often it is sufficient to give 15 to 30 grains (1 to 2 Gm.) before time of expected paroxysm. The product can be taken for weeks without harm. *Meyer and Cahn.* 179

Inhalation of 1: 1000 epinephrin solution in a special very fine spray from small atomizer advised for arrest of a paroxysm by patient at any time. In established severe attacks, following combination recommended: Epinephrin solution, 9 c.c.; atropine sulphate, 0.01 Gm.; cocaine hydrochloride, 0.025 Gm.; distilled water, 1 c.c. *Staübli.* 284

Combined injections of 0.0008 Gm. (1/80 grain) of epinephrin and 0.04 Gm. (2/3 grain) of pituitary extract in 1 c.c. (16 minims) of water used with marked success in arresting paroxysms in 300 cases. More effectual than epinephrin alone. Second injection required in only 10 instances. *Weiss.* 296

Bronchopneumonia. TREATMENT. Creosote carbonate recommended for use in bronchopneumonia and obstinate chronic bronchitis in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first three years; in fifth and sixth years, 20 drops (2 Gm.). *Hunäns.* 162

Burns. TREATMENT. Where patient shocked and cannot stand anesthesia, use dressings of saturated picric acid solution for two days. Then clean up burns under chloroform general anesthesia with 70 per cent. alcohol, rubbing vigorously, and dress with same, on gauze, covered by dry gauze, cotton, and bandage. Dress daily in same way under anesthesia for eight days; then apply boroglyceride gauze dressings, when healing will rapidly follow. In burns involving whole skin, cut off sloughs with scalpel, without waiting for separation. To avoid excessive alcohol absorption, one may interpose boroglyceride gauze between burn and alcohol gauze. *Milligan.* 410

Carcinoma. TREATMENT. Silicic acid internally, 1/8 to 1/3 grain (0.01 to 0.02 Gm.) daily, advised to prevent recurrence after cancer operations. In cancer of digestive organs, however, not more than a few milligrams should be given daily. *Benedikt.* 242

Carcinoma, Esophageal. TREATMENT. Hydrogen dioxide, 1 dessertspoonful of 1 to 3 per cent. solution every hour, found to be valuable palliative measure where stenosis apparently complete. Within twenty-four hours stenosis is overcome, and later purées and even solid food can be swallowed. Subjective symptoms disappear and patients gain in weight. Measure of little use, however, in scirrhous form of cancer. *Fradiss.* 109

Carcinoma, Uterine. TREATMENT. Method described value of which depends on (1) destruction of gross mass of carcinoma in uterus by the actual cautery heated to a little less than dull cherry-red heat; (2) ap-

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plication of heat to pathological tissues until whole pelvis has its temperature raised to 120° F. Uterus is thrown off as charred lump and remaining shell becomes a cicatricial mass free of carcinoma. Cachexia disappears and cure is more probable than with any other method. *Percy.* Page 234

Cardiovascular Disease. TREATMENT. Ideal diet in presence of impaired circulation consists essentially of bread and butter, with some milk to supply fluid, and enough cheese to make up protein requirements; fruits and vegetables to be added in moderate amount. *Bishop.* 108

Reference made to cases with high blood-pressure, hypertrophied heart, without notable thickening of superficial arteries or renal changes of importance. Symptoms usually respiratory or gastric, occasionally vertigo, tinnitus, or peripheral numbness and tingling. Measures advised: 1. Rest, especially mental. 2. Reduction in quantity of food taken, especially of purin-containing articles; small evening meal. 3. Restriction of alcohol, and especially tobacco. 4. Bowels to be kept open with phenolphthalein and rhubarb, or compound licorice powder, and calomel or blue mass occasionally. 5. Nitrites, only to relieve symptoms; where nitroglycerin fails, sodium nitrite, ⅛ to 2 or 3 grains (0.007 to 0.2 Gm.), or erythrol tetranitrate, ½ grain (0.03 Gm.) useful. 6. Sodium iodide, two hours after meals, in water or milk. 7. Digitalis in small doses where dyspnea or even vertigo. 8. Venesection at times very useful and effective. *Riesman.* 288

Chorea. TREATMENT. Twenty-five cases, in children of 8 to 19 years, in which abnormal movements rapidly disappeared after 3 or 4 intravenous injections of 0.2 to 0.35 Gm. of salvarsan, given weekly. Recovery regularly after three or four weeks. General condition also always greatly ameliorated. *Marie and Chatelin.* 38

Constipation. TREATMENT. Stubborn constipation in infants is relieved by giving 1 dram (4 c.c.) of olive oil once or twice daily. Constipation in neurasthenics is also benefited. *Bram.* 47

Diabetes Mellitus. TREATMENT. For first two weeks restrict to careful antidiabetic diet, unless sugar in urine practically disappears in less time. Then cautiously increase carbohydrates, always warning patient of danger of overeating *permissible* articles. Should sugar persist, put to bed and restrict to 1 raw egg and 2 ounces of olive oil 3 or 4 times a day. Continue free use of a mildly alkaline drinking water. If any acidosis symptoms result, decrease amount of oil and give small quantities of carbohydrates. Proper mastication an important detail in treatment. For constipation, use: Olive oil, castor oil, glycerin, of each, 160 parts; gum arabic, 18; flavoring (oil of cassia or gaultheria), 0.5. Best diabetic flour is: Unadulterated soy-bean flour, 350 parts; unground poppy seed, 30; eggs, 250; pure baking powder, 15; water, 340. *Hodgson.* 39

Cultures of lactic acid bacillus given to 13 cases in doses of 4 to 16 c.c. (1 to 4 drams) three times daily. Indican and sugar in urine both markedly reduced. Results probably due not only to removal of putrefaction, but also to partial inhibition of carbohydrate digestion by the bacilli, as indicated by experiments *in vitro*. *Horowitz.* 235

Necessity for individualization in prescription of diet emphasized. Low carbohydrate tolerance does not imply necessity of ingestion of an excess of meat. In all grave cases meats are dangerous. Vegetables are to be preferred, and those should be prescribed which, while containing a high percentage of carbohydrates, are well assimilated in the individual case. Large amounts of fats are often dangerous. *Graul.* 286

Iodine treatment considered indicated in diabetes in elderly persons. Sajodin, 3 tablets of 0.5 Gm. (7½ grains) each, given daily one after meals, found to cause marked reduction of previously obstinate glycosuria and general improvement in 3 cases aged, respectively, 66, 52 and 62 years. *Lorand.* 412

Diarrhea, Infantile. TREATMENT. 1. Where vomiting a prominent symptom: Iodine solution, consisting of 3 minims (0.2 c.c.) of the tincture in 1 ounce (30 c.c.) of water; one small teaspoonful to be given every two hours, before feedings. 2. Calomel, ⅛ grain (0.01 Gm.), with bismuth subcarbonate, 2½ grains (0.15 Gm.). 3. Some carminative mixture, with addition of rum if signs of collapse. 4. Where mucus and blood in stools: Sodium sulphate or phosphate, with a little opium tincture in bad cases. 5. Where persistent vomiting of food or medicine, falling temperature with aggravation of other signs, or exhaustion shown by sinking of eyes and loss of skin elasticity, hypodermoclysis of following solution to be practised: Sodium chloride, 0.9 per cent.; potassium chloride and calcium chloride, of each 0.02 per cent., and sodium bicarbonate, 0.01 per cent. Dose of solution, 25 to 150 c.c. (6 drams to 5 ounces), according to rapidity of absorption, average being 60 c.c. (2 ounces). Large doses to be given two or three times a day where signs of failing circulation. Injections contraindicated where very high fever. *Day.* 473

Diphtheria. TREATMENT. Intravenous administration of antitoxin advised in cases of malignant diphtheria; 5000 units thus given are equivalent to 20,000 subcutaneously. No bad results from intravenous use in nearly 200 cases. Serum to be warmed to blood heat before injecting. In little children one must cut down on the vein. Intramuscular injections are absorbed in one-half the time required by subcutaneous ones. *Park.* 413

Dupuytren's Contraction. TREATMENT. Thyroid substance continuously administered

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in doses of 0.1 Gm. (1½ grains) found markedly beneficial in 5 cases. *Gilbert.*
Page 173

Dysentery. TREATMENT. Measures useful in form of dysentery sometimes epidemic in institutions discussed. 1. Isolate patient and put to bed. 2. Give calomel, 1 grain (0.06 Gm.), followed in two hours by mixture of dilute sulphuric acid, 3iij (12 c.c.); compound tincture of cardamom, ℥j (30 c.c.), in water, enough to make ℥viij (250 c.c.); 3j every two hours during the disease. 3. Olive oil, 1 tablespoonful every two hours; no other food. 4. Boiled water at frequent intervals. 5. In the aged, debilitated or arteriosclerotic, 1 teaspoonful of brandy every three hours. *Jones.* 163

Eclampsia, Puerperal. TREATMENT. Report of 11 cases in which squeezing out of colostrum from breasts, thoroughly carried out, appeared usually beneficial. *Walcher.* 286

Edema of Extremities. TREATMENT. Where edema of legs resisted all measures, especially where incision not permitted, good results obtained from local use of hypertonic saline solutions—25 to 50 Gm. (¾ to 1½ ounces) of sodium chloride to 1 liter (quart) of distilled water. Soak gauze compresses lightly in this, wrap around legs, and cover with thick layer of absorbent cotton, held in place by bandages. Leave dressing on overnight. Equally good results in edemas due to broken compensation, Bright's disease, etc. *Pathault.* 40

Endocarditis, Chronic. TREATMENT. Three cases stated to have been cured by injections of fibrolysin in conjunction with concussion of the seventh cervical spine to elicit the cardiac reflex of contraction. *Abrams.* 394

Epididymitis, Gonorrheal. TREATMENT. Epididymotomy performed in 16 consecutive cases, 1 bilateral. Result: Sudden and permanent relief from pain; defervesence in two days; rapid reduction in swelling; prompt healing; early convalescence without relapse. *Culler.* 348

Epilepsy. TREATMENT. Solution of 1 part of phosphorus in 10 parts of oil used in 9 cases of severe epilepsy, and generally caused pronounced reduction in frequency of attacks. Enterogenous autointoxication to be overcome before phosphorus begun. *Leubuscher.* 348

Epistaxis. TREATMENT. With patient sitting in chair, stand behind him, place index fingers of both hands beneath body of lower jaw on each side, with thumbs resting behind angles, and make gentle traction upward upon head, and simultaneously extend it backward as far as patient can comfortably bear. Sets up artificial anemia in nose and head in general, causing epistaxis to cease. Desist in one or two minutes, or consciousness may be partly or wholly lost. *Ritschl.* 165

Erysipelas. TREATMENT. Local application of buttermilk on soft rags, latter to be kept constantly wet with it, gave uniformly favorable results. *Arnold.* 479

Eye Injuries. TREATMENT. Following formula used for disinfection of cornea, especially after extraction of foreign bodies: To 2¼ grains (0.15 Gm.) of stovaine, finely pulverized and dissolved in 5 drops of oil, add, after mixing, preferably on a water bath: Hydrated wool-fat, gr. lxxv (5 Gm.), and petrolatum, 3iiss (10 Gm.). Then add gradually: Iodine, gr. ii¼ (0.15 Gm.); sodium iodide, gr. ivss (0.3 Gm.); water, ♏xxiv (1½ Gm.). *Dewaele.* 237

In simple abrasions of cornea: 1. Irrigate conjunctival sac thoroughly with normal saline or boric acid solution. 2. Drop argyrol in eye. 3. Fill conjunctival sac with a sterile medium consisting of petrolatum, ℥vj (180 Gm.); mercury bichloride, gr. j (0.06 Gm.), and sodium chloride, gr. v (0.3 Gm.). Where cornea already infected and ulcer present, sterilize area with phenol, removing excess with alcohol; or else, touch lightly with platinum probe at red heat. In wounds of cornea: 1. Cleanse eye thoroughly. 2. Cut off any projecting iris. 3. Drop in atropine and argyrol. 4. Fill with sterile petrolatum. In burns of eye: 1. Fill with sterile petrolatum. 2. Move eyeball and lids frequently to prevent adhesions. Where sclera wounded: Draw conjunctiva over wound and stitch together. *White.* 240

Scarlet red, 1 per cent. in petrolatum or petrolatum and lanolin, equal parts, found to promote rapid healing in corneal or conjunctival abrasions, wounds, or burns. A minute portion of the ointment is placed on conjunctival surface of everted lower lid and a pad and bandage applied, once daily or on alternate days. Atropine also to be used, if indicated. *Allan.* 359

Fetal Position. DIAGNOSIS. More general use of abdominal examination for diagnosis of fetal position and presentation urged, being safer and generally more satisfactory than vaginal and combined methods. Even in very fleshy patients and in polyhydramnios, pressure on opposite sides of abdomen with one hand, while palpating with other, will often enable one to feel distinctly the fetal parts. *Phillips.* 287

Fibroid Phthisis. TREATMENT. Where profuse expectoration of pus, creosote often best remedy. Dose, 3 to 5 drops (0.18 to 0.3 c.c.) three times daily, given over a long period. Creosote carbonate more easily tolerated; dose, 15 to 25 drops (0.9 to 1.5 c.c.) per day. *Fishberg.* 180

Filariasis. TREATMENT. Case of pronounced elephantiasis of lower extremities in which two intravenous injections of 0.6 Gm. of salvarsan caused disappearance of filariæ from blood and great reduction in size of limbs, weight falling from 400 to 244 lbs. *Barnes.* 1

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Fistula, Rectal. TREATMENT. Injection of 1 per cent. aqueous formaldehyde solution recommended in all varieties of rectal fistula. Care to be taken that external opening of fistula allows free drainage for a few days. *Roehr.* Page 479

Fracture of Forearm. TREATMENT. To correct overriding of fragments, attach to hand, anteriorly and posteriorly, as separate straps, zinc oxide adhesive plasters 2½ inches in width, reading from above wrist to 6 inches beyond extended fingers, and fixed above wrist and about knuckles with encircling strips. Apply usual splint dressing and also a plaster-of-Paris encasing bandage, including hand and lower arm. When this firm, include beneath enveloped forearm, by more turns of plaster bandage, a light, flat wooden splint projecting 1 or 2 inches beyond extended fingers. To a cross-piece at end of this, projecting an inch, attach the double adhesive strap from hand with tacks, thus keeping bony fragments from overriding. *Miel.* 165

Fracture of Hip, Intracapsular. TREATMENT. Longitudinal traction alone often unsatisfactory in results. Longitudinal combined with lateral traction, however, or wide abduction in plaster of Paris, usually gives serviceable limb. Former far easier to apply and the more suitable the older the patient. Plaster-cast method requires much skill in application, and is better adapted to young patients. *Davis.* 41

Gangrene. TREATMENT. Alternate hot (95° F., gradually raised to 131° F.) and cold (room temperature) baths up to knee used with success in a case of sclerotic gangrene of leg. Pain relieved and normal color regained. Alternate immersions practised 30 to 50 times, morning and evening, for over a year. *Borchardt.* 348

Alternate lowering and raising of leg to horizontal position yields an effect similar to that of hot and cold baths in leg gangrene. *Moszkowicz and Frank.* 348

Gastric Pain. TREATMENT. Following combination recommended: Sodii bicarbonatis, gr. xij (0.75 Gm.); magnesii ponderosi, gr. iv (0.25 Gm.); pulveris belladonnæ foliorum, gr. ⅙ (0.01 Gm.). Where pain in association with gastric motor insufficiency, 2 of above powders should be taken an hour and a half-hour before, and again a half-hour and an hour after, each meal. Where delayed evacuation is due to pyloric spasm produced or kept up by hypersecretion, the powders should be taken during whole digestive process, beginning an hour after meals and continuing at intervals of an hour and a half until next meal. *Binet.* 480.

Gastric Ulcer. TREATMENT. Best preparation of bismuth to use is the subnitrate precipitated from a boiling-hot mixture. Cleanse stomach in morning with 150 c.c. (5 ounces) of Carlsbad or Vichy water, and three-quarter to one hour later give 10 to 20 Gm. (2½ to 5 drams) of bismuth subnitrate suspended in tumblerful of warm water. Administer daily, and increase or reduce dose, or discontinue, more or less rapidly, according to clinical course (Fleiner). Another method is to give same doses of bismuth finely suspended in oil, several times daily. Stepp recommends following bismuth suspension: Bismuthi subnitratis, gr. xlv (3 Gm.); chloroformi, ♏xv (1 c.c.); aquæ destillatæ, 5 fluidounces (150 c.c.); 1 to 2-tablespoonfuls to be taken hourly for several weeks. *Aaron.* 42

1. Absolute rest in bed. 2. No food for five to seven days. 3. Morphine hypodermically, until hemorrhage has ceased. 4. Ice-pack on abdomen, or hot applications in absense of hemorrhage. 5. Move bowels by enema, if necessary; where no hemorrhage, give citrate of magnesia or Carlsbad salts. 6. Bismuth subnitrate in 30-grain (2 Gm.) doses, with magnesium hydrogen dioxide (25 per cent.) in 7½-grain (0.5 Gm.) doses three times daily. Give boiled water if necessary to insure retention of these drugs. 7. Rectal alimentation, giving 500 c.c. (1 pint) of 10 per cent. dextrose solution at body temperature every six hours, by Murphy drop method. 8. Return to mouth feeding as soon as possible, according patient's condition, beginning with small doses of albumin water several times daily. *Gompertz.* 139

Injections of atropine recommended to quiet pain and diminish pyloric spasm; especially of service in acute cases. Injection of ¼ mgm. (1/256 grain) to be given three times the first day, then 1 mgm. (1/64 grain) given in 2 doses the second day, then 1½ mgm. (1/42 grain) divided in 3 doses daily for ten to twelve days. *Mathieu and Giraud.* 414

Principle of isolating, but not closing a perforated gastric ulcer followed in 15 cases. All did well, and none ever needed a primary or secondary gastroventerostomy. Perforation was isolated by a gauze tampon and a gauze drain placed next the ulcer and brought out of the wound. The drain was removed in thirty-six hours under N_2O anesthesia. A cigarette drain may be used. This plan should be employed whenever attempt to close perforation by suture fails or the result is doubtful. *Corner.* 414

Gastrointestinal Disturbance, Infantile. TREATMENT. Where constipation present, with retention of toxic food derivatives and symptoms such as high fever, tympanites, stupor, etc., give a 2-grain (0.12 Gm.) dose of calomel in candy form, followed in an hour or two by large dose of castor oil with ¼ its volume of equal parts of aromatic syrup of rhubarb and port wine. Keep child quiet on back. If doubt whether cathartic can work in time, give hot colon flushes to start intestinal action, or in obstinate cases, following enema: Epsom salt, glycerin, of each, 8

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ounces; turpentine, 1 dram, and water, to 2 quarts, given at 110° F.

Subsequent treatment: Diet of toast water or good beef broth alone until temperature nearly normal. Calomel, 1 grain divided, followed by the castor-oil compound, every day and later on alternate days till stools normal. After this, equal parts of aromatic fluidextract of cascara sagrada and glycerin. *Freeburg.* Page 292

Gout. TREATMENT. Atophan used in 48 cases — acute, neuritic, and chronic — with greater relief than had been obtained from other remedies, except in the chronic cases, in which effects were slight. Gouty sore throat and coryza also generally benefited. Dose, 30 to 60 grains (2 to 4 Gm.) a day, in 7½-grain (0.5 Gm.) tablets, 1 or, in severe cases, 2 after each meal and at bedtime, or every two or three hours. *Kahlo.* 350

Headache. TREATMENT. Migraine and other forms of severe headache relieved by causing copious flow of nasal secretions, thus removing congestion of dura and pia. Formulæ used: I. Mentholis, gr. viiss (0.5 Gm.); acidi borici, gr. xv (1 Gm.); iridis florentinæ, saccari lactis, of each, 3ss (2 Gm.). II. Pulveris mayoranæ, iridis florentinæ, of each, gr. xv (1 Gm.); sacchari lactis, 3ss (2 Gm.); veratri (albi), gr. ii¼ (0.14 Gm.). *Lorand.* 237

Treatment of "indurative" variety considered. 1. Saline purge. 2. Rest in bed. 3. Affected muscles to be kept at rest. 4. Free diaphoresis at outset of attack. 5. Hot fomentations or bags *loco dolenti* for several hours. 6. Salicylates in full doses often effective in acute cases. 7. Colchicum and alkalies, if patient gouty. 8. Applications of chloral, menthol, and camphor rubbed together, locally. 9. Massage. 10. Vibration, except where arteriosclerosis. 11. Rhythmically reversed electric current. 12. In chronic cases with marked fibrosis: Potassium iodide and general tonics, or ionization with 2 per cent. sodium salicylate or lithium iodide solution. *Beling.* 291

Hemoptysis. TREATMENT. Subcutaneous injection of 40 c.c. of sterile gelatin solution recommended. Causes in twenty-four hours rise in viscosity of blood by 1.4 of original value. *Cmunt.* 110

To prevent onset of hemoptysis where sense of tightness in chest or sputum blood-streaked: 1. Absolute rest. 2. Nitroglycerin solution, ♏xv (1 c.c.), or sodium nitrite, gr. xv (1 Gm.), in ℥ij (60 c.c.) of water; ℥j (4 c.c.) every four hours for two or three days.—Where actual hemorrhage: 1. Put to bed in comfortable position. 2. Reassure patient. 3. Amyl nitrite inhalation. 4. Atropine, gr. 1/100 (0.0012 Gm.) hypodermically, to be repeated 2 or 3 times in next twenty-four hours. 5. Or, nitroglycerin, gr. 1/100 (0.0006 Gm.) hypodermically, at first every half-hour for 3 or 4 doses, later less often; followed by sodium nitrite, gr. j (0.06 Gm.) every three or four hours. 6. Where excessive nervous irritability, or cough troublesome: Morphine. 7. In abundant hemorrhages: Apply bandages to middle of arms and thighs. 8. Epinephrin hydrochloride, 5 drops of 1:1000 solution, or suprarenal substance, 3 grains (0.18 Gm.), every three or four hours; or pituitary extract, injected subcutaneously. *Frazer.* 111

Hemorrhage. TREATMENT. In operations where bleeding from bone troublesome, cut a fragment of muscle from any convenient place in operative field and apply to bleeding bony surface or edge. Rub in if it will not adhere at first. Always efficient in arresting the bleeding. *Vaughan.* 290

Thermocautery employed with success in 2 cases of hemophilia to arrest hemorrhage that had proven rebellious to pressure, epinephrin, gelatin, etc. *Hahn.* 416

Hemorrhage, Gastrointestinal. TREATMENT. Where only occult blood: Rest in bed, on diet of 3 or 4 liters (quarts) of milk, with Carlsbad water, until no blood detected for three or four days. Where liver or spleen enlarged and Wassermann positive: Specific treatment. For severe hemorrhage from any cause: (1) Diet limited to cold tea, ice-cold milk or egg-white jelly, taken regularly in very small amounts. (2) Saline enteroclysis by drop method, 1 liter each day, with 15 drops of 1:1000 epinephrin solution added. (3) Ice-bag. (4) Gelatin in severe cases. (5) Rectal injections of calcium chloride. (6) Gastric lavage with ice-water, where clots palpable in stomach. *Boas.* 351

Hemorrhoids. TREATMENT. Olive oil a good demulcent laxative in hemorrhoids and anal fissure. *Bram.* 47

Where not much inflammation or hemorrhage, following ointment advisable: Cerati, olei amygdalæ expressi, zinci oxidi, of each 3iiss (10 Gm.); balsami Peruviani, gtt. iij. Piece of this of size of hazelnut to be introduced high up through anus morning and evening, and especially before stool. Where much hemorrhage, following may be used: Chrysarobini, gr. xij (0.8 Gm.); iodoformi, gr. v (0.3 Gm.); extracti belladonnæ fol., gr. x (0.6 Gm.); petrolati, ℥j (30 Gm.). Hot water or antipyrin in powder or 2 per cent. solution equally effective and less irritating. Where intense itching: Aluminis, gr. xv (1 Gm.); camphoræ, gr. xij (0.75 Gm.); adipis benzoinati, ℥j (30 Gm.). Where much moisture and also itching, 10 per cent. bismuth subsalicylate powder useful. If much congestion, use: Bismuthi subsalicylatis, zinci oxidi, of each gr. lxxv (5 Gm.); talci, ℥iij (90 Gm.). In voluminous, readily prolapsing or bleeding hemorrhoids, an injection of olive oil should be taken every evening before retiring. *Plicque.* 166

Rectal injections of pure crystallized calcium chloride strongly recommended for hemorrhage due to hemorrhoids. *Boas.* 351

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Injection method used in about 450 cases with good results. Solution employed: Phenolis, 3j (4 Gm.); glycerini, q.s.; aquæ, q.s. ad 3x (40 c.c.). Phenol and water to be first mixed, then glycerin added drop by drop, stirring. About 50 per cent. of all cases could be safely treated and cured by injections. Clamp and cautery to be preferred, however, where patient not opposed to operation and there is no contraindication. Cases especially suited for injection method: (1) the markedly anemic; (2) tuberculous subjects; (3) where organic disease contraindicates anesthesia, particularly if subjects highly nervous; (4) bleeders. Not over 10 minims of the 10 per cent. phenol solution to be used at one sitting. No superficial necrosis, abscesses or thrombosis in author's cases. *Humphreys.* Page 351

Hernia. TREATMENT. Use of a mixture of 3 parts of hyoscine and 2 of atropine advised to facilitate reduction of incarcerated hernia. Inject $\frac{1}{1000}$ grain (0.00006 Gm.) every five to twenty minutes until desired effect obtained. Full dose for adult males is $\frac{1}{100}$ grain (0.0006 Gm.). *Waugh.* 167

Filigree implantation practised in 146 cases—106 inguinal and 40 umbilical or ventral. Eleven cases were over 60 years of age. In all there were but two recurrences. *McGavin.* 417

Hyperchlorhydria. TREATMENT. Where patient constipated at beginning of treatment, give suspension of magnesia and bismuth just after and again one and a half hours after meals; each dose to represent 6 grains (0.4 Gm.) of magnesium hydroxide and 22 grains (1.5 Gm.) of bismuth subnitrate. Continue for three to five days, and, if evacuations still too frequent, use instead a powder containing equal *volumes* of magnesium oxide and magnesium carbonate, with a little powdered charcoal and sometimes bismuth. Less magnesium oxide should always be prescribed than is capable of neutralizing completely all the acid present. *Tupper.* 167

On a diet as nearly salt-free as possible without special preparation of foods before they reach the cook, hyperchlorhydria almost invariably abates. *Benedict* 354

Ileocolitis, Infantile. TREATMENT. In "putrefactive diarrhea" of infants, all irritating found should be avoided as, by causing increased mucous flow, it favors bacterial pullulation. Use of proteid of cows' milk, obtained by removing whey from skimmed milk with chymogen or pepsin, advisable. Break up curd into fine particles and suspend in 5 per cent. gelatin water, to be heated before administration. After four or five days to a week replace gelatin water partly by buttermilk, and skimmed-milk curds by whole-milk curds, gradually getting child on albumin-milk and finally on whole-milk mixture. *Grulee.* 168

Impetigo Contagiosa. TREATMENT. Remove all crusts, wash raw surfaces with bichloride solution, make a fresh paste by adding a few drops of mercury bichloride and ammonium chloride solution (1:2000) to small quantity of zinc oxide, and apply to irritated places twice daily. *Hiden.* 182

Infections, Pyogenic. TREATMENT. Dilute sulphuric acid in 20- or 30- minim (1.25-2.0 c.c.) doses, diluted with 2 oz. (60 c.c.) of water, every four hours, found very useful in treatment of carbuncles, boils, and other local pyogenic infections. Rapid circumscription and granulation of affected area follows. Dressing of 1:20 carbolized petrolatum used externally. Same measure found useful in early sepsis, inflamed lymphatics, blind boils, recurrent pimples and acne. In bronchiectasis and phthisis sputum becomes less purulent and less in amount. *Reynolds and Reynolds.* 284

Influenza. TREATMENT. Care to secure proper ventilation, alimentation, and elimination necessary. Local treatment of air passages important, to destroy causative bacillus. In the morning: 1. Cleanse nose and throat with spray of Dobell's solution or 1:400 phenol solution at 85° to 90° F. 2. Swab with: Balsam of Peru, gr. x (0.6 Gm.); ichthyol, gr. v (0.3 Gm.); glycerin, q. s. ad f℥ij (60 c.c.). In the evening: 1. Repeat spray. 2. Have patient inhale for one-half hour creosote, 8 c.c. to quart of water. 3. Swab nose and throat with epinephrin solution. 4. Fifteen minutes later swab with argyrol, 10 per cent. Hydrotherapy of value in chronic cases. In severe chronic cases, sojourn in an even and sunshiny, but not tropical or subtropical, climate desirable. *Jones.* 111

Inversion of Uterus. TREATMENT. To arrest hemorrhage, place elastic band around base of uterus in vagina just tightly enough to check flow of blood, but no more; take off band when bleeding stopped. Where inversion incomplete, tampon vagina, and perhaps also suture vulva together. Reduction of uterus not to be attempted until shock recovered from; otherwise, mortality considerable and reduction frequently fails. Reduction to be done under general anesthesia, with pelvis elevated. Operator to exert pressure near orifice of one tube with tips of fingers, using rest of hand for counter-pressure. *Zangemeister.* 354

Iritis. TREATMENT. Sinus infection considered responsible for many cases of intra-ocular inflammation. Following treatment used with good results in 26 cases of iritis and 5 of idiopathic retinochoroiditis: Saturate tampon, of such size as to fit snugly between middle turbinate and septum and extend from exterior portion of nose to sinus posteriorly, with aqueous argyrol solution (gr. xl-℥j) and introduce. This will drain ethmoid and other sinuses. To drain antrum, place tampons under scroll of middle turbinate and above upper part of inferior turbinate. Allow to remain twenty minutes to one hour. *Manning.* 112

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Lead Poisoning. TREATMENT. Obstinate lead colic relieved and constipation overcome by giving a tumblerful of olive oil once daily. *Bram.* Page 47

Leprosy. TREATMENT. Salvarsan used in 5 cases. Caused clinical improvement, cases showing partial or complete resolution of nodules of tissue examined. Effect is not specific or permanent. *Wellman.* 114

Leukemia. TREATMENT. Benzol (benzene) used in 6 cases of myeloid leukemia and 1 of Hodgkin's disease with good results. Given in capsules each containing 0.5 Gm. (8 minims), with same amount of olive oil; at first, 4 capsules daily, after meals, then 2 capsules 3 times daily, later 4 times, and finally 5 times. Leucocyte count gradually lowered to normal, fever disappears, and general condition improved. Effectual where other measures, including X-rays, have failed. *Kiralyfi.* 114

Benzol in doses of 7 minims (0.5 c.c.), increased to 15 minims (1 c.c.), in capsules, after meals and at bedtime, given in 5 cases—4 myelogenous and 1 lymphoid. Results: Rapid fall in leucocytes, resulting in leucopenia in 3 cases; diminution in size of spleen; improved red cell count and hemoglobin; disappearance of lymph-nodes in lymphoid case; improved general condition. Use of drug should be controlled by frequent blood examinations. *Billings.* 293

Marasmus. TREATMENT. Large series of infants with marasmus, congenital or acquired, and premature infants, treated with marked success by external application of codliver oil. Wrap child in oil-soaked flannel from armpits to iliac crests, and cover with oiled silk. Remove flannel, wash skin with soap and water, and reapply flannel, at twelve-hour intervals. Give only water by mouth, in ample quantity. Treatment causes rise in temperature, loss of dryness and wrinkles of skin, and an increase in weight, often considerable. Feed by mouth only when temperature has been normal for a number of days and skin shows increase in fat and water content. *Gray.* 114

Measles. TREATMENT. Following measures employed in 160 cases: (1) hot bath, followed by (2) application of eucalyptus oil to whole body except hands and part of face about mouth, nose, and eyes; (3) mouth irrigated twice daily with weak alum lotion, and glycerin and borax applied to interior of mouth and gums; (4) tonsils and fauces treated with 1: 10 phenol morning and evening, using firm cotton mop on end of forceps; (5) blanket-bath given morning and evening for four successive days, followed by general oil rubbing. Treatment reduced mortality and had favorable influence on course of disease. Careful nursing and maintenance of an even air temperature of 65° F. important accessory measures. *Connolly.* 239

Nephritis, Acute. TREATMENT. Saline proctoclysis advised in acute nephritis in children. Tends to relieve edema and subjective symptoms and improve condition of urine. Normal salt solution, kept at about 110° F. by hot-water bottles surrounding graduated container, passed into rectum through soft-rubber catheter, which is inserted about 6 to 8 inches after a cleansing enema. Procedure also useful in acute infectious diseases and toxemic diseases, as well as before and after ether anesthesia. *Lowenburg.* 171

Following treatment advised: 1. Rest in bed until two weeks after red cells and kidney epithelium disappear from urine. 2. Diet: Limit or exclude proteids; give carbohydrates in large amount, especially sugar, fruit juices and fruits rich in sugar, and gruels of finely ground rice, corn, wheat, or potato starch; also give thoroughly washed butter; withhold salt. Milk to be given only after dangerous stage past. Menu then enlarged gradually, adding at first purées, boiled green vegetables, cocoa, yolk of eggs, etc., and only later white of eggs, river fish, and boiled meat. 3. Fluids: Fruit juices, weak tea (Chinese tea, grass seeds, dried strawberries, or raspberries, blackberry leaves, etc.) or simple pure water. 4. Elementary measures: Theobromine preparations; diaphoresis only where edema. Hot, dry climate acts same as sweat baths. Where other methods fail, puncture of skin. In threatening uremia, venesection and, if latter ineffective, decapsulation. *Von Noorden.* 231

Renal decapsulation practised after appearance of anuria in 2 cases of nephritis due to acute mercurial intoxication. Both cases ultimately died, but not from anuria, urinary function having been resumed. *Tisserand.* 295

Nephritis, Chronic. TREATMENT. Following treatment advised: (1) Exercise to be allowed unless hematuria occurs,—avoiding overexertion. (2) Frequent long vacations. (3) Diet: Limit proteids to amount that will maintain bodily strength (80 to 100 Gm., a third at most in the form of meat, *i.e.*, 130 to 160 Gm. of meat weighed raw); preserved meats, except mild ham, to be forbidden; rest of proteids to consist of milk, eggs and vegetable albumins; amount of fat and carbohydrates to depend upon general nutrition, and should cause neither undue gain nor loss of weight. (4) Salt intake to be restricted in so far as it does not interfere with palatability of food; to be prohibited only where edema. (5) Restriction of fluid to 1¼ to 1½ liters a day, except one day weekly, on which amount is raised to 2½ liters. In "secondarily contracted kidney" about 2 liters should be allowed daily. (6) Carefully prescribed gymnastics for the heart. (7) Baths and massage; especially, lukewarm baths followed by cold douches and vigorous rubbing, in alternation with electric or carbon dioxide baths. (8) Diuretin, 7½ grains (0.5 Gm.) three times a day for a month, every third or fourth month. (9)

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Warm, dry climate, with avoidance of considerable altitudes. *Von Noorden.* Page 357

Neuritis. TREATMENT. Place long electrodes consisting of absorbent cotton wrapped in gauze, parallel in pairs along limbs or spinal column. Current to be transmitted through metallic bands of suitable length. Intensity of current 60 to 80 milliampères for an arm and 100 to 125 for a lower limb. Sitting to last three-quarters to one hour, and be frequently repeated. Method used in nearly 600 cases, with excellent results. Traumatic myelitis benefited. *Hirtz.* 420

Nevi. TREATMENT. Use of radium advised. Skin should first be broken over lesion, even if only by lightest electrolysis, to permit of rapid action and therefore small dosage of radium salt. Eradication without scarring. *De Courmelles.* 172

Ophthalmia, Gonorrheal. TREATMENT. Stock gonococcic vaccines used in 9 cases, causing prompt reduction of swelling and protecting deeper corneal and conjunctival tissues from invasion. Initial dose for babies, 50 millions; subsequently 100 millions. For adults, double these doses. Local cleanliness and antisepsis to be simultaneously maintained. *Mittendorf.* 349

Otitis Media. TREATMENT. Where discharge copious, syringe ear gently but thoroughly 2 or 3 times daily with saturated boric acid solution, or, better, mercury bichloride solution, 1: 8000, sometimes later 1: 4000. Where discharge scanty, first cleanse ear with cotton mop, or if acute stage of attack passed drive out discharge by Valsalva method or Politzer bag and wipe out again. Then have patient incline head and pour in bichloride solution, allow to remain ten minutes, dry ear, not very thoroughly, and plug meatus with absorbent cotton. Do this not oftener than once daily. Exceptionally, especially where there is extensive destruction of drumhead, insufflation of boric acid, or of boric acid and aristol or zinc oxide, equal parts, proves more efficacious than the mercury solution. *Theobald.* 116

In long-standing cases of chronic catarrhal otitis media that have resisted usual measures, cocainize parts, insert fine catheter into middle ear, and with syringe inject through it 5 to 10 minims of 10 per cent. argyrol solution. Causes inflammatory reaction and pain for forty-eight hours, but hearing is markedly improved. *Hays.* 296

Following measures advised in chronic otitis media: 1. Restricted diet, mainly of vegetables, fruit and buttermilk; prohibition of red meats and pastries. 2. Calomel, 5 or 10 grains, followed in six or eight hours by 1 ounce of castor oil, and this, in three or four hours, by ½ oz. of magnesium sulphate and 1 dram of sodium bicarbonate in 6 ozs. of carbonated water. Magnesium sulphate, 1 dram, daily before breakfast for from two to four weeks. 3. Sodium or strontium iodide, 1 to 5 grains; sodium or strontium salicylate, 5 to 10 grains, and tincture of nux vomica, well diluted, 3 times daily after meals. 4. Removal of nasopharyngeal and faucial abnormalities. 5. Alkaline wash used with nasal cup two or three times daily to keep nasopharynx clean. 6. Vibratory massage over subglenoid fossa, with gentle inflation of middle ear with vapor of chloroform, iodine or menthol, two or three times a week. 7. Where membrane relaxed and flabby: Paint posterior inferior quadrant with tincture of iodine (25 per cent.) once or twice a week, or with flexible collodion. 8. Small doses of thyroid extract. 9. Thiosinamine in cases with well-defined adhesions. *Stucky.* 297

In acute otitis media, otitis externa, myringitis, and furuncle of auditory canal, mixture containing 5 per cent. each of phenol and ichthyol in glycerin found very efficacious. *Nelson.* 488

Pancreatitis, Subacute. TREATMENT. 1. Rest. 2. Limitation of diet. 3. After acute attack of pain has passed off, cholecystostomy. *Archibald and Mullally.* 360

Paralysis, General. TREATMENT. Hexamethylenamine, gr. x (0.6 Gm.) thrice daily, found effectual in preventing retention of urine and avoiding necessity for catheterization. *Baird.* 242

Pediculosis Capitis. TREATMENT. Lay patient on back on bed with head over edge, hair lying in a basin beneath head on a chair. Pour 1: 40 phenol solution over hair into basin and sluice backward and forward until hair thoroughly soaked, especially over ears and at nape of neck. Continue sluicing ten minutes, then lift hair from basin and allow to drain, without drying it. Then swathe head with thick towel or large piece of flannel and allow to remain for an hour. Finally wash hair or simply allow to dry. Method entirely safe with children of 5 years and over. Hair not damaged. *Whitfield.* 173

Pellagra. TREATMENT. Gelsemium followed by much improvement in 5 cases. Fluidextract, 3 or 4 drops every four hours, given. Discontinue drug if ptosis or diplopia occurs. *Blosser.* 174

Pelvic Inflammation, Chronic. TREATMENT. Following procedure of massage used with good results in chronic perimetritis with adhesions, chronic parametritis, shortening of uterosacral ligaments with uterine retrodisplacement, and old pelvic exudates: steady and slightly lift up cervix with index and middle fingers of left hand, and with right hand, by rotary movements, massage uterus through abdominal wall, slowly, and only 10 to 15 times at the first treatment. If no unusual pain or soreness follows, repeat three times weekly until symptoms relieved. Where uterus retroverted, place inside fingers against anterior portion of cervix and push posteriorly, at same time bringing uterus forward with outside hand. *McMorrow.* 421

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Pemphigus. TREATMENT. Case of refractory pemphigus in which intravenous injection of blood from patient's husband, without previous defibrination, was followed by complete recovery. *Praetorius.* . Page 422

Placenta Prævia. TREATMENT. Pituitrin used with good results in 16 cases. If only a small portion of placenta presents, and especially if vertex presents and cervix is sufficiently dilated, membranes should be ruptured and pituitrin given. In other cases employ combined version with pituitrin, and await spontaneous delivery, merely extracting arms and head. Where dilatation insufficient for combined version, insert small dilating bag or vaginal tampon, and later do version and give pituitrin. *Trapl.* 423

Pleurisy. TREATMENT. Autoserotherapy advised in all cases of pleural effusion where fluid not purulent. Upon exploratory puncture, do not withdraw needle entirely, but inject 2 to 5 c.c. of the fluid when its point is in subcutaneous tissue. In favorable cases, general amelioration in two or three days; in about 80 per cent. of cases fluid will disappear in a week or ten days. In some patients treatment may have to be repeated several times every two or three days before benefit appears. *Fishberg.* 425

Pneumonia, Lobar. TREATMENT. Sodium citrate internally found in most cases, especially in children, to cause fall in temperature, pulse, and respiration to normal within twenty-four hours; process in lung clears up soon after, third stage being apparently escaped. Administered in doses of 30 to 40 grains (2 to 2.6 Gm.) in adults every two hours, with a little citric acid or in lemonade. Dose for children to be calculated from 40-grain dose in adults. Drug to be continued till clearing up of process in lung complete. Active catharsis to be established at beginning of treatment. Sodium chloride should be supplied to system in about the normal daily amount (240 grains, or 16 Gm.), with the diet or otherwise. *Weaver.* 116

Administration of calcium chloride in 10-grain (0.6 Gm.) doses every four hours advised, from outset until three days after defervescence. Patients given it seem to do better than others. *Cornwall.* 175

Creosote carbonate observed to lower temperature considerably and diminish somnolence or delirium in pneumonic processes in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first 3 years; in fifth and sixth years, 20 drops (2 Gm.) and in seventh to tenth years, 25 to 30 drops (2.5 to 3 Gm.). Administered readily in a spoonful of warm milk. To be continued in ½ doses for a week after auscultatory signs have disappeared. *Hunäns.* 162

Use of a 20 per cent. solution of camphor in olive oil previously washed with alcohol recommended in both lobar and bronchopneumonia. Mortality seemed lowered by post-tro-chanteric injections of this. Dose in cases of intermediate severity, 10 c.c. (2½ drams); in grave forms 15 and even 20 c.c. (3¾ and 5 drams), ½ the amount being injected morning and evening. In children 1 c.c. (16 minims) for each year of age is given. *Certain.* 299

Following mercury and sulphur combination advised in both lobar and lobular pneumonia: Hydrargyri chloridi corrosivi, gr. ss (0.03 Gm.); sulphuris præcipitati, ʒij (8 Gm.); aquæ destillatæ bullientis, fʒiv (120 Gm.). This is to be shaken and then quickly given in the dose of 1 teaspoonful every two or three hours for two or three days. If, when the thirty-second dose is reached, catharsis has not occurred, ½ ounce (15 c.c.) of castor oil is given. Cessation of fever and loosening of cough promptly follow these measures; lung infection is apparently cut short. After evening temperature is normal, the mercury-sulphur mixture is continued for several days longer at four- to six- hour intervals. *Kolipinski.* 402

Poisoning by Illuminating Gas. TREATMENT. I. First stage, preceding loss of consciousness: 1. Fresh air. 2. Aromatic spirit of ammonia. 3. Effervescent sodium phosphate, to produce eructations and relieve nausea. 4. Oxygen inhalation. 5. Analgesics for headache. 6. Avoidance of violent exertion.—II. Second stage, patient unconscious, but breathing: 1. Howard artificial respiration, rhythmic compression of lower thorax, to assist breathing. 2. Oxygen, preferably under pressure. 3. Camphor, caffeine, digitalis, and strychnine hypodermically. 4. External heat, if indicated. 5. Massage of muscles after aërating lungs. 6. Treatment to be conducted in warm room. 7. If not prompt recovery, venesection and normal saline infusion, or use of "pulmotor."—III. Third stage, patient unconscious and not breathing: 1. Same measures as in preceding stage. 2. Blood transfusion. 3. Artificial respiration by Schäfer method, patient prone. *McCombs.* 44

Prurigo. TREATMENT. 1. Good hygiene. 2. Generous diet. 3. Codliver oil. 4. To control itching: Baths with starch, sulphurated potash, or creolin; tar, pure or mixed with olive or codliver oil; codliver oil ointment, with betanaphthol or phenol added. 5. To dissipate any coexisting eruption: Sulphur, in soap, solution of potassium sulphide, or thermal waters; codliver oil, covered with bandage and impermeable varnish; codliver oil, 3 parts, and white wax, 1, used as pomade, with or without covering; alternate injections of phenol and pilocarpine; X-rays; thyroidin. 6. In rebellious and severe cases: Soap patient in warm bath and apply a tar preparation or Vleminckx's solution. 7. In stage of lichenification: Radium. *Morris.* . 50

Psoriasis. TREATMENT. Potassium permanganate, 2 tablespoonfuls of a saturated

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solution added to a warm bath, recommended for acute universal psoriasis. After soaking in this for ten or fifteen minutes, patient to dry himself thoroughly and apply following lotion: Amyli, talci, of each, 40 parts; glycerini, 20 parts; acaciæ, 1 part; liq. plumbi subacetatis, 4 parts; liq. picis carbonis, 26.5 parts; aquæ, 200 parts. Tar baths, preparing by adding 1 or 2 glasses (℥viij or xvj) of an emulsion of coaltar, also excellent, though a tar salve, rubbed in after a bath, is often better. Following paste found efficient in some obstinate old patches: Acidi salicylici, 10 parts; chrysarobini, olei rusci, of each, 20 parts; saponis viridis, adipis lanæ hydrosi, of each, 25 parts. Cover with oiled silk. A lotion of 1 part of lead subacetate solution to 5 of liquor picis carbonis, diluted 3j-Oj, may be used to envelop the part, covered with oil-silk, and allowed to remain all night. *Montgomery.* Page 175

Pyelonephritis in Pregnancy. TREATMENT. 1. Rest in bed. 2. Elevation of affected kidney. 3. Morphine or codeine for pain. 4. Early catharsis by calomel and salines. 5. Ice-cap to loin. 6. Cream of tartar water internally. 7. Diet: Milk, skimmed if much digestive disturbance, or lactone buttermilk. 8. Hexamethylenamine, gr. v-x (0.3-0.6 Gm.) with lithium or potassium citrate, gr. x, at three- or four- hour intervals. 9. Replace last after forty-eight hours by sodium benzoate, gr. x every two hours, until patient complains of burning in kidney region, when first combination should be resumed. 10. Potassium iodide or phenyl salicylate might also be used. 11. Argyrol (25 per cent.), 3j (4 c.c.), instilled into pelvis in cases persisting more than ten days. 12. In colon bacillus infections, autogenous vaccines, 30 to 50 million once a week, have been successful. 13. Induction of labor, in persistent cases late in pregnancy. 14. Nephrotomy and drainage where definite signs of surgical kidney present. *O'Connor.* 240

Quinsy. TREATMENT. To relieve dysphagia, place on tongue 0.3 to 0.4 Gm. (5 to 6½ grains) of dry orthoform or anesthesin powder. A few movements of deglutition, without previous admixture of saliva with the powder, will bring it in contact with affected parts. Measure also useful after operation on tonsils. *Hinsberg.* 418

Renal Inflammation. DIAGNOSIS. With patient sitting erect, but relaxed, lightly palpate lumbar muscles. If one kidney is seat of an inflammatory process, muscles on that side will feel firmer than normally. *Pottenger.* 418

Rheumatism, Muscular. TREATMENT. 1. Rest in bed. 2. Liberal diet of milk, eggs, light meats, farinaceous articles and cruciferous vegetables. Buttermilk and water between meals *ad libitum*. 3. General bath daily, with temperature progressively increased. 4. Massage, after pain and tenderness under control at least twenty-four hours. 5. In lumbago or other localized muscular troubles where general methods inefficient: Acupuncture or injection directly into involved muscle of 10 c.c. of ice-cold normal salt solution. 6. Where severe pain: Salicylates, at first in large hourly doses, with sodium bicarbonate. Locally, 20 per cent. salicylic acid ointment or liniment of oil of gaultheria, followed by flannel jacket or bandages, with hot-water bottles or electric pads. *Meyer.* 484

Rhus Dermatitis. TREATMENT. 1. To prevent further penetration of poison: Soap and hot water bath of whole body; discard all clothing exposed to the poison. 2. To relieve itching, water as hot as can be borne. 3. Curative remedies: Ichthyol collodion, 5 per cent., painted on lesions three times daily. Magnesium sulphate in saturated solution, applied on gauze, covered with rubber tissue and bandage. Iodine tincture, diluted with 9 parts of water. Hot 2 per cent. (or weaker) potassium permanganate solution; remove stain with 1 per cent. oxalic acid solution. 4. Where pustules have formed: Hot mercuric chloride solution. *Von Adelung.* 300

Scalp Wounds. TREATMENT. Shave scalp for some distance around wound, either dry or wet with alcohol; after area dried, paint with tincture of iodine and wash off surplus with alcohol. In suturing use figure 8 sutures, not too tight. Where parts badly torn, provide free drainage; stitches not to be too close together. In all fractures of skull give 40 to 60 grains (2.6 to 4 Gm.) of hexamethylenamine daily. *Harper.* 119

Scarlet Fever. TREATMENT. Salvarsan used in 109 cases. Striking effect on throat symptoms, especially in necrosing form, noted. Indicated in severe toxic forms especially. Good results even upon local application. Neosalvarsan not suitable. *Jochmann and Schreiber.* 364

Sciatica. TREATMENT. Good results from X-ray treatment in 11 out of 13 cases. Rays directed usually over lumbar region, sometimes over nerve itself. Small doses only. In cases resisting ordinary medical treatment and galvanic current, radiotherapy should always be tried, especially when sciatica due to compression of nerve-roots. *Delherm.* 365

Marked improvement in 2 cases after a few daily subcutaneous injections of 1 c.c. (16 minims) of 1:1000 epinephrin solution. *Gaisböck.* 478

Septicemia. TREATMENT. Fixation abscess advised, consisting in injection of 15 mimins (1 c.c.) of spirit of turpentine in cellular tissue of thigh, loin, or deltoid region. *Carles.* 413

Sinus Suppuration, Acute. TREATMENT. Apply 4 per cent. cocaine solution on cotton applicator, passed between end of middle turbinate and nasal wall. Follow by a cleans-

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ing alkaline solution and an oily spray containing menthol. To reduce pain and promote drainage: Hot, moist applications over whole face. Salicylic preparations, acetphenetidin, and quinine, to be used as indicated. Free catharsis. Irrigation of frontal or maxillary sinuses unnecessary unless there is trouble in antrum traceable to carious tooth. Vacuum treatment by negative air-pressure often useful. *Lemere.* Page 176

Syphilis. TREATMENT. Following plan advised: Intravenous salvarsan injection, immediately followed by series (12 to 15) of intramuscular mercury salicylate injections, and later by 4 to 6 intramuscular injections of small doses (0.1 to 0.2 Gm.) of salvarsan in sesame oil. After this start new series of mercury salicylate injections, to be continued at increasing intervals during first year of disease. A number of the cases thus treated appeared to be cured. *Eisenstaedt.* 53

Immediate tolerance to neosalvarsan is greater than to salvarsan, but this does not warrant use of relatively larger doses of former. Neosalvarsan to be preferred to salvarsan where latter badly borne and in cases of tabes, paresis, arteriosclerosis, cardiac disease, *i.e.*, in all patients in whom too marked a reaction is to be avoided and where only small doses are indicated. *Bayet.* 115

Salvarsan given intravenously in doses of 0.2 to 0.4 Gm., four to six times at weekly intervals, in 14 pregnant syphilitic women. Each gave birth at term to a living child, generally of normal weight, and none showing stigmata of the disease. *Jeanselme.* 299

Tabes Dorsalis. DIAGNOSIS. Spontaneous fractures not infrequently an initial or early symptom of tabes. *Taylor.* 54

Talipes Equinovarus. TREATMENT. Immediately after birth place strip of zinc oxide adhesive plaster over sole and inner aspect of foot, over correct position of latter, and draw plaster tightly along outer aspect of leg. Place second strip over sole just posterior to base of metatarsals, extending over inner aspect of foot and ending over joint of great toe. Draw firmly, apply to outer side of leg 1 to 2½ inches above external malleolus, and wrap around leg in ascending spiral. Place further strips to cover and tighten the second tension strip, beginning on leg 2 inches above ankle and overlapping until instep reached. Renew dressing, after cleansing foot with ether and alcohol, ten days or two weeks later. Deformity will be corrected in 6 or 8 weeks. Leave foot with stiff-ankle infant-shoe, with 1 strip of adhesive on outer side of foot and leg. *Allen.* 178

Tapeworm. TREATMENT. Thymol in cachets of 0.25 Gm. (4 grains) to be given in the morning on an empty stomach for eight days. Worm usually expelled on third or fourth day. Twenty-three cases treated with success. All alcohol to be stopped during treatment. *Artault.* 366

Tetany. PROPHYLAXIS. In pregnant and puerperal patients and after gynecologic operations, when Chvostek's sign positive and symptoms such as paresthesia of hands, itching, pains in fingers in sewing or writing, and muscular weakness or stiffness present, give calcium chloride in following form: Calcii chloridi (puriss.), ʒv (20 Gm.); syrupi menthæ piperitæ (vel syrupi rubi idæi), ʒij (60 Gm.); aquæ destillatæ, ʒx (300 Gm.). Dose of calcium chloride to be carried as high as 75 to 90 grains (5 to 6 Gm.) a day in adults and, in newborn infants, to 15 grains (1 Gm.). *Kehrer.* 365

Tinnitus Aurium. TREATMENT. To relieve stuffiness of Eustachian tube—the most frequent cause of tinnitus—inject in it with catheter a 2 to 5 per cent. solution of dionin, using sufficient force to cause it to enter tympanic cavity. *Randall.* 491

Tonsillitis. TREATMENT. Following measures used in severe follicular tonsillitis and streptococcic sore throat: 1. Mixed streptococci vaccine subcutaneously. 2. Silver nitrate solution, gr. lxxx-f3j, applied to tonsils once or twice daily. 3. Mild antiseptic gargle, used every two hours or oftener. 4. Calomel in fractional doses, until free catharsis occurs. 5. Ice-bags, as needed. 6. Salicylates and Dover's powder, to reduce temperature and quiet pain. 7. Plenty of fluids—water, milk, lemonade. 8. Acetylsalicylic acid, locally and internally. *Goldstein.* 405

Toxemia of Pregnancy. TREATMENT. Free administration of oxygen seemed useful in a number of cases, some severe. May be given either by inhalation or subcutaneously. *Shears.* 242

Tuberculosis, Articular. TREATMENT. Thyroid substance indicated in sluggish cases, especially if evidences of thyroid inactivity present. Dose should be only 1/6 to ½ grain (0.01 to 0.03 Gm.) *pro die*, and patient watched for tachycardia. *Lereboullet.* 179

Tuberculosis, Laryngeal. TREATMENT. Submucous cauterization found to heal 70 to 85 per cent. of cases. Performed with electric cautery. Easier than curettage, and there is no bleeding. Not suited, however, for superficial ulcers on posterior wall, particularly those on the cords, which do better on the old method of lactic acid applications. *Pettit.* 237

To relieve dysphagia, place on tongue 0.3 to 0.4 Gm. (5 to 6½ grains) of dry orthoform or anesthesin powder. A few movements of deglutition, without previous admixture of saliva with the powder, cause it to descend into contact with diseased areas covering entrance to larynx, and in a few minutes patient can swallow without distress. Measure can be repeated three or four times daily for several weeks. *Hinsberg.* 418

Tuberculosis, Pulmonary. DIAGNOSIS. Value of percussion in earliest stage em-

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phasized. With patient lying on back on couch, employ light percussion on terminal phalanx of a finger firmly pressed on spot under examination. Three characteristic dull areas on either side should be sought, which may all be present and of considerable size while apex is still very fairly resonant: 1. Opposite inner part of first intercostal space (percussing anteriorly) and inner part of suprascapular fossa (posteriorly). 2. Opposite outer part of same interspace, and outer part of suprascapular fossa. 3. In upper part of lower lobe, percussing posteriorly at end of spine of scapula, and anteriorly in second interspace. *Lees.* Page 54

Quantitative examination of albumin in sputum easily made and useful in diagnosis in doubtful cases. Technique as follows: To 20 c.c. of sputum as free from saliva as possible add a 3 per cent. acetic acid solution slowly, while agitating, until mucin is coagulated; add 2 parts of distilled water to sputum, shake well, filter through several layers of gauze, add a few drops of acetic acid solution, filter, and test filtrate for albumin by any ordinary test. If more than a trace present make quantitative test with Esbach's tube and multiply reading by 3 to get percentage. All active cases give positive reaction. *Works.* 117

TREATMENT. 1. Inhalation of following solution: Creosoti, phenolis, spiritus chloroformi, ana 3ij (8 c.c.); tincturæ iodi, spiritus ætheris, ana 3j (4 c.c.). Two Yeo inhalers to be used on alternate days, cleansed by immersion in boiling water and careful drying. Patient to pour 6 to 8 drops of solution on felt of inhaler *every hour* during daytime, and once or twice during night if awake. Petrolatum or lanolin cold cream to be smeared over nostrils and upper lip before use of inhaler at first. 2. Period of rest in bed at beginning of treatment. 3. Treat digestive disturbances. 4. Give a sufficiency of easily digested food; malted milk, dissolved in scalded whole milk, after each meal. 5. Careful disinfection of mouth 4 times daily, after the milk; antiseptic sprays for unhealthy conditions of fauces. Forty-eight complete recoveries in 70 cases thus treated. *Lees.* 54

Hydrotherapeutic measures, to be employed in 4 successive stages or steps, described: I. Ablution, beginning with water at 90° F., gradually reduced, by 2° daily until 60° F. reached; followed by drying and, if possible, exercise in open air. II. Affusion. With patient standing in water at 105° F., water at 85°, gradually reduced to 60°, is thrown over back and chest. III. Cold rub. With patient standing in water at 105°, a sheet is wrung out in water at 80°, gradually reduced to 50°, and actively rubbed till sheet warm. IV. Drip sheet. Same as last, with sheet dripping; patient rubbed and slapped for two minutes; water at 70° then poured over shoulders, and friction applied till sheet warm; same procedure rapidly repeated over other parts of body. *Baruch.* 56

Olive oil, ½ ounce (15 c.c.) two hours after each meal, increased weekly by ½ ounce up to 3 ounces, found to cause considerable gain in weight. *Bram.* 47

Sodium cinnamate subcutaneous injections found superior to cacodylates in all varieties of cases in which a general tonic effect required. Initial dose, contents of 5 c.c. (1¼ drain) ampoule, including 0.5 Gm. (⅛ grain) of the cinnamate; this to be rapidly increased by one-half, bulk of solution, however, being kept the same. Injections given daily. *Laborde.* 118

Counterirritation with mustard sometimes found very effective in night-cough. Soft capsules containing beechwood creosote, 1 minim (0.06 c.c.), oil of sandalwood, 5 minim (0.06 c.c.); oil of sandalwood, 5 grains (0.12 Gm.), given 4 or 5 times daily, may be of decided benefit for cough. *Gordon.* 119

Importance of hyperalimentation in cases of tuberculosis in pregnancy where it is decided not to empty uterus emphasized. Use of following mixture advised to increase appetite: Lysol, 1 part; ichthyol, 10 parts, and glycerin 20 parts. Begin with 1 drop and increase by 1 drop at each dose up to 30 drops, which is maintained. Preparation dropped into half tumblerful of water and taken just before meals. *Stewart.* 175

Four to 8 capsules, each containing 4 grains (0.25 Gm.) of liver substance, *pro die* found effective in arresting or preventing return of hemoptysis. In cases with low arterial tension and asthenia, epinephrin, 5 to 10 drops of 1:1000 solution daily for five to ten days, followed by like period of rest, or of adrenal substance, 1½ to 5 grains (0.1 to 0.3 Gm.) daily, is indicated. Bayle secures good results by administering 100 Gm. (3½ ounces) of fresh hog spleen every day. Loeper and Esmonet advise pancreatin, 2 to 4 Gm. (3ss-j) in keratin-coated capsules of 0.25 Gm. (4 grains) each, daily in first and second stage cases, and especially in patients with involvement of serous membranes; improves appetite and general condition. *Lereboullet.* 179

Sluggish, afebrile cases of tuberculosis, especially with profuse expectoration, are often greatly bnefited by creosote. *Fishberg.* 180

Addition of tuberculin to sanatorium treatment found to increase chances of clearing sputum of tubercle bacilli by about 17 per cent. in early and moderately advanced cases. *Bardswell.* 363

Treatment of cough in phthisis described: (1) For nervous cough: Swabbing throat with 30 per cent. potassium bromide solution, or taking 15 grains (1 Gm.) of this salt in water. (2) For pharyngeal cough: Gargling with betanaphtholis, gr. iij (0.2 Gm.); sodii boratis, ʒss (15 Gm.); aquæ

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menthæ piperitæ, 3vij (24 c.c.); aquæ, q. s. ad 3xxxv (140 c.c.). If inflammation present, pharynx to be swabbed with: Cocaine hydrochloridi, gr. ij (0.12 Gm.); resorcinolis, gr. xv (1 Gm.); glycerini, ʒj (30 c.c.). Following gargle also useful: Sodii salicylatis, 3vj (24 Gm.); antipyrinæ, 3j (4 Gm.); aquæ laurocerasi, aquæ aurantii florum, ää 3ss (2 c.c.); glycerini, ʒiiss (75 c.c.); aquæ destillatæ, q. s. ad 3xxxv (140 c.c.). (3) For laryngeal cough: Orthoform powder or a solution of balsam of Peru; following draught: Tincturæ bryoniæ ♏x (0.6 c.c.); tincturæ aconiti, ♏xx (0.2 c.c.); tincturæ belladonnæ foliorum, ♏x (0.6 c.c.); syrupi opii, ʒj; aquæ, ʒiv; one teaspoonful every two hours. (4) For tracheal cough: Terpini hydratis; pulveris ipecacuanhæ et opii, ää gr. ij; to be taken in cachet two or three times a day. (5) For gastric cough, 2 drops of opium tincture or ⅙ grain (0.01 Gm.) of codeine ten minutes before each meal. *Robin.* Page 363

Tuberculosis, Surgical. TREATMENT. Use of "injectio trypsini" recommended for tuberculous abscesses of all kinds, synovial hydromata, sinuses, arthritis, etc. After an insignificant local reaction, pain, tenderness, and tubercle bacilli disappear, pus becomes more fluid and undergoes absorption, and healthy tissues proliferate. Dilute the preparation as supplied with 2 to 10 parts of sterile saline solution, inject strictly subcutaneously 1 c.c. (of pure preparation), and distribute beneath skin by gentle massage, one to three times a week. Where abscesses, puncture with trocar and inject; where sinuses, inject into surrounding tissues in several places; where ulcers, under their bases; where synovial hydromata, into the sheath, and where tuberculosis of joints, in part directly into joint, partly into surrounding tissues. Undiluted injection used in the joint cases. *Baetzner.* 301

Typhoid Fever. DIAGNOSIS. Modified Russo test recommended: Place in a test-tube enough of a just translucent aqueous solution of methylene blue to extend just above the bowel. Then fill tube with urine and, after mixing, examine color against good daylight. Emerald or mint green indicates positive reaction; any tinge of blue renders it negative. Urines containing bile or blood not suitable for test, and those clouded by phosphates, urates, etc., should be filtered. Test is constantly positive in typhoid and but rarely in other conditions; negative reaction is good evidence of absence of typhoid. Appears early in the disease. *Neuman and Behrend.* 429

TREATMENT. Olive oil considered very useful as a food in 1- to 3- ounce (30 to 90 c.c.) doses 3 times daily. Also useful as a laxative; high injections of lukewarm oil may be given. *Bram.* 47

Collective statistics as to results of use of typhoid vaccines show 423 cases, with only 5.4 per cent. deaths. Dosage used by author: Initial hypodermic injection of 500,000,000, repeated at four-day intervals as long as required, and increased by 100,000,000 each time. Stock-vaccine injections made just under skin over insertion of deltoid or over tensor vaginæ femoris. *Callison.* 57

Series of 65 cases treated without milk, on diet consisting of broths, soups, gruels, gelatin, eggs, sugar of milk and butter. Gelatin given almost ad libitum—6 ounces of 5 per cent. solution, flavored with lemon, vanilla, etc., five times daily. Mortality low, persistent diarrhea only in 4 cases, hemorrhage in 4 and perforation in none. *Johnson and Watt.* 181

Iodine, in aqueous solution or as tincture—the latter in doses of 15 to 25 drops daily in a mixture of cinchona and malaga wines or in milk—given in 44 cases. Cases with profuse diarrhea, distention or nausea appeared to improve, rapid recovery usually occurred, and mortality seemed to be lowered. *Arnozan and Carles.* 304

Ulcers. TREATMENT. Value of dry treatment of wounds, burns and ulcers emphasized. Keeping a leg ulcer exposed to air, lightly dusted with aristol and stearate of zinc, is an effective treatment. Patient should lie down, elevate leg and protect it from flies and dust with thin layer of gauze. *Pitfield.* 285

In chronic leg ulcers, wash affected surface and surrounding area with 90 per cent. alcohol, and apply following ointment on sterile gauze, with firm bandage from foot to knee: Acidi borici, 3ij (8 Gm.); adipis lanæ, petrolati, ana ʒij (60 Gm.). Repeat washing with alcohol next day, give whole leg massage with alcohol and stiff brush, and reapply ointment. After a few days, scrape base and edges of ulcer clean. Use the wool-fat ointment for two or three weeks, then 5 to 10 per cent. thymol iodide in cold cream. Continue alcohol treatment, and cauterize granulations with silver nitrate if necessary. *Wade.* 356

Urethritis, Gonococcal. TREATMENT. Fluidextract of aconite recommended for relief of congestion and irritation; 1 minim every one or two hours for intelligent patients and every three or four hours for unintelligent. Interval to be doubled as soon as tingling, perspiration and a feeling of relaxation appear. *Pedersen.* 305

Urticaria. TREATMENT. Epinephrin given subcutaneously in doses of 8 minims (0.5 c.c.) in 6 cases. Two doses always caused complete fading of rash and cessation of itching in ten to twenty minutes. Recurrence probable in an hour or two unless treatment continued. *Swann.* 164

Vaccinal Ulcers. TREATMENT. Constant application of antistreptococcic serum as a wet dressing, covered with oiled silk, to indolent ulcers resulting from extraneous infection of vaccination site, recommended.

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Remove oiled silk and remoisten dressing, without disturbing it, three or four times daily. *Sexton.* Page 492

Vincent's Angina. TREATMENT. In mild cases, best results from use of trichloracetic acid. Membrane first removed by hydrogen peroxide and wiping with cotton swab; ulcer then anesthetized with 10 per cent. cocaine solution, and trichloracetic acid applied a few minutes after. Usually 3 or 4 applications at 2- or 3- day intervals necessary. Tincture of iodine preferable where ulceration extensive. For pain, orthoform. Carious teeth to be cared for. General condition also to be improved. *Halstead.* 58

Vomiting. TREATMENT. In a number of instances vomiting can be immediately arrested by means of the pyloric reflex of dilatation, which consists of pressure or concussion of the fifth dorsal spine. *Abrams.* 394

Vomiting of Pregnancy, Pernicious. TREATMENT. Sodium bicarbonate, 5 to 50 grains (0.3 to 3 Gm.) a day, recommended. Part of it often vomited, but some retained. Continue for a week after vomiting stopped. Bowels to be well cleared by colonic flushing. Veronal also found useful. *Lyon.* 59

Whooping-cough. TREATMENT. Pertussis bacterin used in 40 cases. Disease not shortened, but bacterin causes, after preliminary slight aggravation, well-marked, and sometimes remarkable, symptomatic improvement in a certain proportion of cases. Best results produced at the height of the disease. Give 2 or 3 full doses—20 to 50 million bacteria each—at five-day intervals. In young infants moderate doses should be given early; they diminish severity of disease and minimize complications. *Zahorsky.* 48

Pertussis vaccine used in 17 cases. Best dose found to be 40 million bacteria, given in buttocks even to an infant twice a week, or in severe cases in old children, 3 times a week for one week only. If much benefit noted, intervals prolonged, and vice versa. Many cases improved after single dose. No reaction from injections, local or general. Vaccine should be used only in undoubted cases of the disease. The younger the infant, the more rapid the cure. *Scott.* 174

1. Following preparation recommended: Ichthyolis, ʒiiss (10 Gm.); glycerini, ʒss (15 Gm.); liquoris calcis, ʒiiss (10 Gm.); olei amygdalæ amaræ, gtt. iij; olei anisi vel menthæ piperitæ, gtt. x; syrupi, q. s. ad ʒiiiss (100 Gm.). Dose in children up to 1 year of age, 4 to 6 teaspoonfuls; up to 2 years, 3 to 4 dessertspoonfuls; 3 to 4 years, 4 to 5 dessertspoonfuls; 5 years and upward, 4 to 5 tablespoonfuls. These doses can be exceeded in obstinate or long-standing cases, or those complicated with capillary bronchitis or bronchopneumonia. 2. As adjuvant in young children: Instillations of weakly mentholated oil in nose. 3. Emetic and purge at beginning of treatment. 4. If bronchopulmonary complications should appear: Mustard baths and antiseptic inhalations. 5. Where hemoptysis: Inject diphtheria antitoxin and, this failing, hepatic extract. *Naamé.* 306

Wounds. TREATMENT. Treat all wounds on which great force has been exerted, and especially those contaminated by soil and dirt-covered objects, as if infected with gas bacilli. Leave open where possible and irrigate thoroughly with peroxide. Bandage lightly, if at all. Inspect frequently and irrigate often. On first sign or symptom of infection, take smear and examine for *B. aërogenes capsulatus.* Open wound freely, if sutured, and if on limb place latter in bath or irrigate continuously. If condition extensive, expose field widely to air by free incisions. (Do not employ peroxide in full strength or inject in confined spaces or directly under tissues.) *Cramp.* 42

Wounds of face and hands should be closed with subcuticular stitches, especially in women. To prevent subsequent stretching of scar, close superficial fascia with interrupted fine silk sutures before applying subcuticular stitches. After injuries to soft parts of hand, cleanse quickly by immersing in gasolene; after latter has evaporated, sterilize parts with tincture of iodine and alcohol. *Harper.* 119

Application, in gunshot wounds, of steaming towels wrung out in water as hot as can be borne, during thirty minutes night and morning before wound is dressed, recommended. To be continued till all inflammation subsides. *Griffith.* 110

Use of paste made by adding a few drops of mercury bichloride and ammonium chloride solution (1:2000) to small quantity of zinc oxide recommended for slight wounds, abrasions, injection punctures, indolent ulcers, sores about the face, etc. Where much stinging and itching about abrasions, substitute 2 per cent. phenol for bichloride. *Hiden.* 182

Scarlet red ointment, 2 to 4 per cent., advised for acceleration of healing in granulating postaural operative wounds, after radical removal of rodent ulcers, etc. *Allan.* 359

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The General Field

Conducted by A. G. CRANDALL

Snake-bite and its Treatment

Dr. Truman Abbe, of Washington, D. C., recently read a very interesting article before the Medical History Club of that city, which has since been published in the Medical Record, in which he referred to the medical and surgical procedures which were in vogue in the days of the Revolutionary War.

Among the interesting methods described we find the treatment of snake-bite. A soldier seized a rattlesnake by the tail which promptly bit him in the hand. This was followed by great pain and rapid swelling of the injured hand ascending to the arm and shoulder. The physician succeeded in inducing the patient to swallow large doses of olive oil until he had taken at least a quart, meanwhile rubbing mercurial ointment into the affected limb. These remedies proved efficacious and the soldier recovered.

It might naturally be supposed, with the avenues of communication incident to army life, that with this successful treatment the prevailing fear of snake-bite at that period might have been materially modified. It seems, however, that a more popular remedy became the vogue. Another historian records an instance of a member of a hunting party, who being pricked in the hand by a thorn identified the wound with the presence of a small snake and rushed to the camp for immediate treatment. Having imbibed nearly a quart of another fluid, quite different in its constituents from olive oil, he became immune to the sorrows of life for several hours. A comrade looked up the snake and found it to be of a harmless species, and the patient soon recovered, the one unfortunate feature of the case being that the camp suffered during the rest of the hunting season from a shortage in the demijohn.

There is no doubt that death from snake-bite is a horrible thing. So great has been the faith in whisky as a remedy that many people have sought to immunize themselves systematically with the fear that some time or other they might encounter a rattlesnake with their systems unprepared. This immunizing process has continued until the present day, although poisonous reptiles have long since ceased to be a serious menace.

Earning Their Salaries

Members of Congress who are detained by pressure of legislative duties and no prospect of finding some sylvan retreat in which to recuperate from the strain of their summer's work, can well feel that they are earning their salaries.

To be sure the precedent is pretty thoroughly established in the District of Columbia that it is proper and feasible for a public man to wander away from the capitol occasionally, but, even taking the most optimistic view of their routine, it certainly must constitute something of a strain to sit, day after day, and hear the various brands of oratory which have been pulled off for the benefit of the "folks at 'ome."

While there is probably quite a dissimilarity in the quality of the eloquence being poured forth with reference to the various tariff schedules and Web-

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ster's reply to Hayne for example, this talking has to be done and it certainly would be getting rather shabby treatment if a certain reasonable number of the speakers' colleagues did not remain spellbound at their desks.

We have lately found out that the high cost of living in Washington makes the moderate salary of a congressman look very small. It might not be a bad idea to increase the congressional salary during the summer months of an extra session. If it is worth $20 a day to stay in Washington during the moderate winter weather, it certainly should be worth $40 to remain there and listen to tariff speeches in midsummer.

Where Practice Should Make Perfect

One of the regrettable features of the railroad business, which has often been noted, has been the delay in getting out a rescue train after a bad wreck. Hours sometimes pass before the rescuers can arrive on the scene, remove the dead and wounded, and take away the obstructions.

The New Haven Railroad, however, has acquired the reputation of being very expert in this respect. Probably no railroad in the country can get a rescue train more quickly on the scene of a great disaster than the New Haven system.

Of course, there is a great deal in practice, and this railroad company has had very unusual opportunities to acquire proficiency along this line.

It is well to always look for the silver lining to the clouds. This dexterity in manipulating a relief train is about the only creditable thing in the long succession of railway disasters which has afflicted the New Haven road.

Physicians residing along the line from Stamford to New Haven should also have gained much valuable clinical experience. Graphic monographs describing some of the surgical problems encountered in this district of the United States might reasonably be looked for in the near future, and have a large sale in New England.

Friends of the Farmer

It is interesting to note the tender solicitude manifested for the farmer by the politicians. Washington is full of the farmer's dear friends who fairly deluge him with seeds, entirely unsolicited and a few of which sometimes germinate. To be sure, the seeds are distributed without any reference to their adaptability to the various soils and climates, but that is a small item compared with the generous impulse which actuates such distribution.

The proposed new tariff, like the last one, is especially adapted to help the farmer. Tariff duties on agricultural implements are entirely removed. Of course, it is well known that practically all agricultural implements used in this country are made here and the price would not be affected if there were a 100 per cent. tariff, but it is such a nice thing to be able to help the farmer with the tariff that we hear on every side of this generous action.

But the crowning act of generosity is found in the distribution of government funds among the banks in the south and southwest to assist the farmer in moving the crops. To be sure, millions of idle dollars are awaiting safe investment and the farmer will be likely to have to put up very excellent security if he handles government money, but it sounds so magnanimous and generous to be able to report to a news agency that so many millions of

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government funds have been distributed with a view of assisting the farmer in moving his crops, that it would be a shame not to make note of such an act of benevolence.

Various magazine writers have written entertainingly of the different gold-brick schemes which have been foisted on the unsuspecting public. It might not be diplomatic, but it would certainly be appropriate if some of these people, gifted with the pen, would turn their attention to the gold-brick schemes worked off on the farmer by professional politicians, irrespective of age, color or political faith, who habitually pose as statesmen.

In the Name of Safety

Some of the most cunningly devised advertisements now making their appeal to timid housewives and incidentally to their husbands are those put out by the manufacturers of small arms.

The illustrations showing in sharp contrast the shadows occupied by the sneaking burglar with a bright light surrounding the hero with a pistol are no doubt quite impressive to some of those who do not think.

The fact is that the man with a pistol who tackles a burglar usually gets the worst of it, and a very moderate amount of reflection will show that the man in the dark has all the advantage over the man engaged in the burglar hunt.

Probably the ordinary pistol does one hundred times as much harm as it ever does good.

A good many family magazines refuse to carry advertisements of quack medicines. They have developed a standard of ethics which makes them see the gross impropriety of taking these suggestive advertisements into the homes of their patrons. Now let them go a step farther and refuse to carry the pistol advertisement and they will be working along exactly the same lines that they have in excluding the more injurious quack medicine advertisements.

Advertisements of the rifle and the shotgun have their legitimate place. It is eminently desirable that a reasonable proficiency in the use of these weapons be acquired by the young men of the country, but the weapon which can be concealed has little excuse for existence in a civilized community.

Pot and Kettle

The very evident desire of the executive powers of this country to avoid entanglements in the Mexican troubles has occasioned considerable sarcastic comment across the water.

While there are quite numerous dissenters among us as to our prevailing policy in Mexican affairs, there seems to be remarkable unanimity in one respect, which is that European critics should have plenty to occupy their attention in administering their own affairs.

It is not a very agreeable situation to be vociferously clamoring for peace with a situation on hand which might logically suggest a more strenuous policy; but even if our boasted Monroe Doctrine is at present posing as an innocent little lamb, bedecked with pink ribbons which have become somewhat bedraggled by Mexican impudence, there does not seem to be any special occasion for people who have been allowing such scenes of violence to go on unchecked at their back doors for many months, to be sending sarcastic messages across the Atlantic.

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This is a peaceful country. We are going to have peace at any cost—even the cost of transporting Americans at lowest steerage rates from Vera Cruz to New Orleans.

Why Such Indirect Methods?

There has in recent years been a great inundation of literature in various forms designed to educate the lay public as to the venereal peril. The question may well be asked, Why need the methods of imparting this knowledge be so indirect and cumbersome?

The proposition is a very simple one when reduced to its main essentials. There are two very serious venereal diseases, both occasioned by clearly recognized germs. One form of disease is unfortunately regarded as much more simple than it really is; while the other which is, by the way, more amenable to treatment, is looked upon in the same circles with little short of horror.

It is a popular delusion that syphilis is a comparatively rare disease and that gonorrhea is a relatively simple matter which produces most of the misery and degeneration associated with these two plagues.

Most any physician feels the duty resting upon himself to impart necessary instruction as to the prevention of tuberculosis. Why should he not make use of his many opportunities for educating his people as to the greater prevalence of syphilis than is popularly understood to be the case, and especially with reference to the long train of consequences which may be due to an apparently simple but not quite cured case of gonorrhea?

If there is anything unconventional or unprofessional about such an educational plan, it could hardly be accepted as based upon any humanitarian or practical line of reasoning.

Hard to Understand

It is reported that a little eleventh hour joker is likely to have been inserted in the new tariff law on its passage which will undo much that the societies have been trying to accomplish for the protection of the plumage birds.

Just why it is that a handful of dealers in millinery supplies should be able to override the wishes of a great majority of the general public has always been a mystery.

But for hostile insects the high cost of food problem would vanish instantaneously. At the present time the farmer has had but one reasonably active and effective ally in his combat with these predatory insects and that is the birds.

Of course the millinery lobbyist is able to present his argument in a very practical way. He represents real business, whereas the opposition is made out to be composed of neurotic, ill-balanced sentimentalists. That has been an argument against many desirable reforms. Unfortunately it has prevailed far too often with the eminently practical politician.

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PRESIDENT'S ADDRESS.*

BY NOBLE P. BARNES, M.D.,

WASHINGTON, D. C.

GENTLEMEN OF THE AMERICAN THERAPEUTIC SOCIETY: It is perhaps superfluous for me to express my profound appreciation of the distinguished honor that has been conferred upon me by this Society, America's representative of advanced therapy. Seemingly it would be a grievous error if left to the unwritten understanding.

Realizing the exalted position does not impart alone a feeling of satisfaction, for the president of a national organization like this is all the more "a debtor to his profession" and is deeply sensible of the associated responsibilities. This occasion of supreme attempt is therefore approached with hesitancy, even timidity; when, reflecting for a moment, I recall the celebrities in whose shoes I am standing, if not filling, today: Wood, Wilcox, Satterthwaite, Barker, Osborne, Beck, Reyburn, Shoemaker, Gerrish, Wilson, Wiley, and Blackader.

My thirteen years as secretary to this Society have been a great schooling—an annual post-graduate course of new therapy six to twelve months in advance of the press. This and another selfish reason are my excuses for inflicting my services for so long a period.

There is a sense of delight in meeting and rubbing shoulders with and knowing great men, but there is a greater satisfaction in having them know you. A secretary is always known, possibly not always pleasantly, but he is known. This is my second excuse. Rewards today realized constitute a greater measure than my meagre efforts deserve, and must be regarded at least in part an expression of respect for my colleagues, the local members,

* Read at the Fourteenth Annual Meeting of The American Therapeutic Society, held in Washington, D. C., May 5 and 6, 1913.

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who have likewise contributed to the success of the Washington meetings of the Society.

To read the programs of the scientific sessions of The American Therapeutic Society is to review the advances in the practical and most important branch of medicine and surgery in a period of time that has outstripped the accumulation of all ages in scientific attainments; resulting not only in the greatest relief for the individual patient but in the fulfilment of a broader conception—the prevention of disease and the care of the public health.

Therapeutics of today is not an art but a collection of facts, scientific or empirical, and the latter are passing through the furnace of scientific proof. The instruments of precision and investigation that made histology, physiology, bacteriology, and pathology have now entered the field of therapeutics. These scientific studies have given us our chemotherapy, our serums, and our vaccines. The actions of these only a few years ago would have been considered miracles.

The entire scope of accurate therapy co-ordinates with scientific results that can be prognosticated. The old blind, unreasoning faith in the mysteriously wise physician is gone, and through thoughtful reasoning and accurate deductions we have passed into the spotlight of science with corresponding death-rate reduction, diminished infant mortality, and lengthened span of life. The remnants of fanciful theorizing and superstitious faith are nowadays seen only in cults and pathies born of ignorance and nourished by selfish imposition of the unscrupulous on the still ignorant.

Until recently, the general profession was several years in arrears of advanced medicine and the people several years behind the general profession. Notwithstanding the advances made it is yet an interesting fact that the professional ability of a predecessor can be accurately gauged by the family's knowledge and application of the principles of health and hygiene.

It is needless to remind you that a few decades ago there was little scientific therapy; that the organization of The American Therapeutic Society was for the purpose of giving life to the important excuse for our professional existence, the treatment and prevention of disease.

Need I remind you that our drug armamentarium was in a questionable condition; that our pharmacies were surfeited with proprietaries, and that so-called synthetics and new combinations were strangling all attempts at rational drug therapy?

Need I remind you that one of the first acts of this Society, May 2, 1900, was to present a plan to the Pharmaceutical Convention, then in session, relative to the formation of a bureau of materia medica investigation? This plan a month later was presented to the American Medical Association, and finally culminated in the establishing of a Council on Pharmacy and Chemistry which, in conjunction with the efforts of a similar department of the government, has accomplished inestimable good for both layman and physician.

Need I remind you that in order systematically to tabulate the progress in therapy a method was first instituted in our New York meeting of 1902

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to review the advances in the various branches? This suggestion was soon adopted by leading societies and journals all over the world. Live again for a moment that inaugural symposium with D. B. St. John Roosa, Wm. H. Carmalt, Chas. H. Knight, Eugene Fuller, Chas. G. Kerley, Ed. D. Fisher, Mathew D. Mann, Chas. Jewett, Newton M. Shaffer, Wm. J. Morton, and Chas. W. Allen.

Need I remind you that in another year we had taken up the important subject of the teaching of therapeutics and the equally important proposition of drug standardization? Still another year and we had a survey of progress in anesthesia that stands in advance to this day, and a study of the combat with infection presented by an equally strong array of talent.

Symposia on Diseases of the Vascular System, on the Treatment of Tuberculosis, on Roentgen Ray Therapy, on Diabetes, on Cholelithiasis, on Diet, on Psychotherapy, on Matters Pertaining to the Revision of the Pharmacopœia, and, lastly, on the Etiology and Treatment of High Blood-pressure, have been presented by men of advanced thought and authorities on their respective subjects.

Likewise every form of therapy, from chemical to mechanical, from physical to psychical, from curative to preventive, has been presented by a score of experts. Papers on metabolism, anaphylaxis, immunity, and every phase of advanced medicine and surgery have entered into the varied, interesting and instructive programs.

It was indeed a happy time for the birth of a therapeutic society that was to live in and to assist in the development of modern scientific medicine.

In this day of The American Therapeutic Society we have travelled from the discovery and understanding of many pathogenic bacteria, the etiological factors in many diseases, their means of invasion, their hosts, their life and habits and the measures to employ to prevent or neutralize their existence, to the benevolent organisms and their employment in combating disease and deferring old age.

We have come to realize that these lower forms of life, hitherto impenetrably shrouded, have, through their influences on man, actually ruled the universe from all time. Good or evil government, health or disease, strength or weakness, have depended entirely upon the opposing forces; the beneficent and malignant microbes constantly at war in the human body.

The triumph of health over disease is an understanding of these. We no longer wait for the deadly microbe to intrench and mass, but anticipatingly defend by immunizing. Thus have the scourges of small-pox, lockjaw, typhoid, diphtheria, and hydrophobia succumbed to science.

This modern conception of disease, its causes, and its prevention, has made health resorts out of previously diseased and death-ridden districts. It has enabled our armies to muster without having hundreds die of disease to every one killed in battle. It has permitted the completion of the greatest engineering feat of modern times. It has enabled Stiles and his co-workers to overcome the insidious worm of laziness. It recently enabled Surgeon-general Blue and his force to prevent the spread of cholera and the bubonic

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plague. It enabled McLaughlin to understand the cause of infant mortality where mothers were living on foods lacking in nitrogenous elements. It has enabled the hygienic laboratory to prepare rabies antidote not only for cases that come here for treatment, but for those applying for treatment at the health departments in any part of the country. It has given pure water and pure milk to the community. It is hopefully wrestling with pellagra, cancer, and other diseases that have not yet surrendered.

Never in the history of mankind has there been a period of time so replete in activities for lessening disease and accident, preventing mental and physical suffering, and contributing to the happiness of the whole people.

This is truly the age of the gospel of health and hygiene. Results are already apparent. The health office report for 1912 announced the lowest death rate ever known in the District of Columbia. In two decades, death from typhoid has been reduced more than 66 per cent.; from tuberculosis, over 33 per cent. We now count on a span of life about ten years longer than the allotment of 1900.

It requires deliberate reflection to realize the changes in modern life that have resulted from recent scientific medical discoveries. The practical application of these has made it possible for masses of human beings to live in comfort and health where overcrowding was formerly penalized by death. The whole scheme of modern life is built around modern sanitation, the removal of which would cause our existing cities to shrivel with a promptness that would fade into insignificance the pestilences and plagues of the past.

While in harmony with all methods of public education that are conducted along rational lines, I cannot refrain from calling your attention to this swift-moving age with its thirst for individual aggrandizement and notoriety. The classic can now be changed to read:—

"Lives of great men all remind us"
We can make our lives eternal
Without departing, have beside us
Four-inch headlines in the journal.

In this day we have movements, founders, organizers, expounders, professional philosophers and general disturbers of the peace. We have a multiplicity of authority on education, social order (or disorder), moral (or immoral) hygiene, political economy, international diplomacy, cattle, cats and children. There are some real artists in this line who get money, it is claimed, for every word they write, and there seems to be no limit to the writing! Some is good, some bad, some dangerous.

The anxious mother who has a dyspeptic and unnatural child—or a normal one for that matter—must feel a sense of relief when she shifts the responsibility of the child's diet and living to the guidance of a literary expert who boldly states that the child may select his own diet and there shall be no argument about it, for "he wants what he wants when he wants it." This, "like the love of God, passeth all understanding."

In this education and re-education of mankind there is evidence of the general wave of hysteria that has spread over the world. Here are two men

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writing on the same subject: "Care of the Skin, etc." One is enthusiastic over soaps, listing a sufficient variety to arouse suspicion; the other decries their use, and belittles the mind still clinging to the delusion.

Here is another man, remotely removed from the New York subway, who believes that upon agitation of the air, no matter how confined, the currents will produce the desired degree of freshness.

Still another interesting suggestion, novel enough for notice, comes from a French educator, Dr. Léon Meunier. He claims that walking on all fours after a meal is the best means to expedite gastric evacuation. There will be opportunity for the members to confirm this statement during this meeting. To walk around the tables in this manner may appear unprofessional and undignified; but why object so long as the right education is being given to an organ that shows a rebellious spirit during occasions of this kind?

Then we have the mushroom sex educators, often perverts, with their "important messages to parents." If there was ever a day when a child needs our deepest consideration, that day is here. Such a bombardment of advice has never before been directed against the helpless innocent. Here is a book on "How to Train the Young," "What Should a Girl Know?" "What Should a Boy Know?" etc. Some of these books are good, some excusable, some devoid of sense and abounding in suggestion, some the products of spinsterhood, and some the expiring efforts of masculine senility. Pity the child who falls victim to these hysterical effusions.

The influence of the press on the evolution of the people is an important and serious matter. More attention should be given to the medical items, which are sometimes handled in a careless manner. The people have a right to receive accurate statements and the editors are anxious to supply the public demand. Misrepresentation may occur when an enthusiastic reporter desires to supply an interesting news item; but more often the error is the result of the effort of some self-appointed educator to air his name and address and frequently his cure.

The greater the interest in subjects pertaining to health and hygiene, the better for preventive therapeutics. Any means, therefore, of disseminating medical knowledge that is correct and proven, that eliminates the undesirable and the untrue, is proper. No vehicle can carry this burden better than the daily press.

A presidential address should contain at least one suggestion, even if it be but the "two grains of wheat hidden in two bushels of chaff." Therefore I ask your indulgence for a few minutes to discuss briefly a subject that has, I dare say, been in the minds of every thinking physician since his college days.

Hosts of students are so confused in their study of pharmacology, so drowned in the enormity of its proportions, so discouraged in the monotonous memorizing of the meaningless mass, that they fail to collect and retain the wheat and in due time become drug nihilists or thoughtless prescribers of proprietaries, replenishing their forgotten studies with the dictum of some manufacturing pharmacist who enlightens them with all the brand-new

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therapy published in an advertising sheet with a high-sounding name, at a dollar a year and with a clinical thermometer thrown in, "Make it two and receive a leather pocket case with our specific drugs."

Many other men absorb a great amount of materia medica and are clever at prescription writing in the second year; but the clinical staff, educated in the old way, slights therapeutic application, fits patients to numbered combinations, and the labor of a year is lost. If the clinician prescribes nostrums, what can be expected of the young graduate? He naturally becomes a thoughtless, indifferent prescriber of the "elegant pharmaceutical preparations" of which he knows nothing except what he gleans from the manufacturer's literature—"a highly colored expression of printers' art"—and proceeds to medicate accordingly. Can drug therapy advance under these conditions?

These shortcomings might, to some extent, have been attributed to our lack of exact knowledge in the past; but today we have enough facts to make a perfectly rational teaching materia medica. It is the amount of facts and knowledge a physician uses that makes his work successful. Inert agents, misapplication, and faulty technique make a failure of the best of them.

If we would but teach and practise with the absolutely proven drugs, materia medica and drug therapy would be placed on a sound and rational basis.

The American Therapeutic Society has a duty to perform right here in preparing and presenting to the teachers and examiners a properly limited materia medica with a rational, scientific classification. This will at once give influence and impetus to a successful, logical, drug therapy.

In the first place, only drugs of indispensable value and, so far as practical, chemically assayed or physiologically tested, should be admitted. The manufacturing chemist and pharmacist and the physiological laboratory men can supply us with drugs of known purity and strength—dependable products, properly selected, properly manufactured, standardized, marketed, and dispensed.

This accurate knowledge of the important drugs will soon restrict the multitude of recognized and unrecognized remedies, give better control and better quality to these remedies, and enable the student to master everything concerning the selected drugs from pharmacognosy to pharmacodynamics, everything from solubility to incompatibility, everything from methods of administration to variations in action.

As stated in the special article of the A. M. A., "The Pharmacopœia and the Physician," Chapter XVIII, "The use of the term 'alterative' is often an admission of our want of exact knowledge of the mode of action of the drugs or remedies so classed." An illustration of this is given in Chapter XX: "Alteratives are tonics which in some unknown way favorably influence the process of nutrition which has been disturbed by disease." Now, if the value of mercury as an alterative is most apparent through its influence on the *Spirochæta pallida,* why is it any more of an alterative than quinine in

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its application to the plasmodium hematozoön when the latter has been classed as a tonic and antiperiodic?

Chapter XVII takes up "Circulatory Depressants," beginning with "The circulation may be depressed by acting on those structures the stimulation of which causes an increase in blood-pressure," an accidentally erroneous statement. But why this uncertain, unthinking classification? The present-day teaching and textbook classification, with few exceptions, throw small light on the practical application of scientific drug therapy. The continued use of the old class terms such as tonics, alteratives, antiperiodics, emmenagogues, etc., is, with our modern understanding, to say the least reactionary, if not ridiculous.

This teaching of the materia medica under a rational classification, to be authentic and conclusive, must bear the stamp of approval of the majority of our membership. While not wishing to be regarded as underestimating any plan the Society is now undertaking to advance therapeutics, I believe the plan here suggested would be of particularly great and lasting benefit to the profession at large. Giving the teacher and pupil a materia medica of proven drugs so classified as to develop the reasoning rather than the memory machine, a synopsis that could be elaborated by the textbook writers and used as a guide by state board examiners, is a plan the accomplishment of which will place drug therapy on a lasting, rational, scientific basis, create delight and gratitude in an overdrugged profession and student body, and reflect lasting credit upon The American Therapeutic Society.

WHAT DOES TREATMENT OFFER TO THE ADVANCED TUBERCULOUS PATIENT?*

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The keynote of success in the treatment of all disease is early diagnosis and early application of the proper therapeutic measures. In spite of the fact that medical science has been able for the past fifteen years to offer an apparent cure to three out of every four patients suffering from tuberculosis, provided the diagnosis is made early and the proper treatment immediately instituted, yet we find a great many patients presenting themselves for treatment who are in the advanced stages of this disease.

It is well for us to examine into the causes which contribute to this unfortunate state of affairs. I have often said that there is a time when every patient suffering from tuberculosis can be cured; but of those patients who

* Read at the Fourteenth Annual Meeting of The American Therapeutic Society, held in Washington, D. C., May 5 and 6, 1913.

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present themselves to us for treatment, it seems, from the average statistics of those who are making the best records in the treatment of tuberculosis, that about 20 to 25 per cent. are unable to secure a healing. Therefore if my first statement is true, we must face the fact that our early diagnoses are being made too late in from 20 to 25 per cent. of cases. If we take this as the measure of the necessary mortality of early clinical tuberculosis, we can see that there is still a great percentage of patients who are unnecessarily passing on to an advanced hopeless stage. We will admit that there is a certain number of patients who, owing to the peculiar pathology of the disease, arrive at an advanced stage without knowing it; but this does not account for the larger number who develop recognizable symptoms which are either neglected by the patient or unrecognized by the physician until a serious condition presents itself.

The responsibility for early tuberculosis reaching an incurable stage must be borne by both the patient and the physician. Patients are inclined to neglect the early symptoms of this disease either through ignorance or through an attempt at deceiving themselves. Quite a percentage will not present themselves for examination during the early curable stage, and there is quite a percentage who, if they do have a diagnosis made, will not accept it. I fear, however, that the medical profession itself must really assume a good deal of this responsibility. Too often a patient suffering from the early symptoms of tuberculosis seeks medical advice, and, instead of an examination and diagnosis being made, the patient is given some palliative remedy which will relieve the most prominent symptom. I often have patients tell me that they have begged and implored the physician to examine their chest and were greeted only by laughter at the idea of the presence of tuberculosis; and numerous instances have come under my observation where the patient collected the sputum and took it to the doctor and forced him to have it examined, and then, when bacilli were found, in order to conceal his negligence, he usually told the patient that the examination showed that "there was not very much," but that "there was a little tuberculosis present." It would seem to me that if the modern physician could do nothing more for a patient where tuberculosis might be suspected, he could at least have any secretion that might be present examined microscopically. While I do not consider this the most important step in the early diagnosis of tuberculosis, I feel sure that it would save a great many patients from going on to a hopeless condition, because it would help to make the diagnosis far earlier than it is now being made.

There is one type of clinical tuberculosis that we meet quite often which almost precludes an early diagnosis. It is the type where the patient becomes ill suddenly, probably without any previous warning, following a cold, a bronchitis, pneumonia, influenza; or, it may be without any of these inciting factors, for some unaccountable reason, a process which had previously been dormant suddenly becomes active. Under these circumstances a truly early diagnosis could only have been made months, or it might be years previously, when the infection took place, or when it first began to manifest clinical symptoms. These cases usually present themselves to us with a sudden onset,

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showing a marked rise of temperature, considerable cough and expectoration, and symptoms which usually attend a markedly acute process. Some of these patients seem to be doomed from the beginning. No matter what we do, they cannot be helped. On the other hand, a considerable number of them, if put on proper treatment at once, can again be brought to a state of arrest in the disease.

Advanced tuberculosis will continue to be prevalent until there is a closer association between family physicians and their patients, and until the laymen learn that a thorough examination is necessary in order to detect this disease early. While it cannot be said that clinical tuberculosis is ever easily cured, yet, if the proper treatment is instituted when the early symptoms first appear, and if the patient will follow the prescribed course for a sufficiently long time, as large a percentage of patients suffering from this disease can be restored to health as in the case of any other serious malady. But if the disease is allowed to progress, a very important advantage is lost.

Owing to the peculiar pathology of tuberculosis the disease becomes progressively more difficult to handle as it advances. The small tubercles which characterize the disease in its incipiency are easily reached by the circulating blood, which carries with it the substances necessary to the production of healing. Later, however, this condition changes, the centers of the tubercles soften; they mass together and form large foci of caseation; the blood no longer reaches the inner portion of the mass, and the bacilli which are therein enclosed multiply, comparatively uninfluenced by the protective substances which may be freely circulating in the blood without the tubercles. While the early tubercle is comparatively easy to heal, the centers of caseation are influenced slowly and removed with difficulty. These cheesy masses may be small, almost microscopic, or they may become so large that they occupy an extensive pulmonary area.

When we attempt to heal advanced tuberculosis we are trying so to fortify the patient that all danger of spreading of the disease to new tissues will be removed and so to stimulate the tuberculous tissue that those areas which are not necrotic will be transformed into scar tissue, while the caseous masses will be separated and thrown off, and the remaining ulcerating surfaces heal. This is a difficult task, but one which can often be accomplished if sufficient time is expended.

Not only is the healing of tuberculosis difficult because of the peculiar pathological features of the specifically involved tissue, but also because of the manner in which the disease affects the other organs and systems of the body. Here again, the difficulties increase with the advance of the process. While the nervous, circulatory, digestive and muscular systems, as well as all organs of the body, are influenced early in the disease, later they suffer a distinctly serious derangement. As the extent of the lesion increases, and more and more of the pulmonary tissue becomes involved, the blood is oxygenated with greater difficulty, and, as a result, all of the tissues of the body suffer a deterioration which counts greatly against the patient in fighting the disease.

Another factor in the deterioration of tissue and the impairment of func-

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tions of the various organs is the toxins which are given off from the tubercles. These are not all due to the bacillary process itself. The bacillary toxins are important, but added to them we have the toxins which result from the disintegration of the tuberculous tissue and those which result now and then when other bacteria complicate the process. The rôle supposedly played by mixed infection seems to be gradually lessening, and we now look upon toxemia from the first two sources mentioned as being the one which must be considered in every case that has advanced beyond the earliest stages.

The heart has a peculiarly difficult rôle in advanced tuberculosis. In the first place, it is called upon to do extra duty. It is obliged to force the blood through the more or less diminished pulmonary areas, and at the same time is reduced in its ability to perform work. It suffers from the general disturbance in oxygenation, and its muscle is weakened by the toxins; its nerve supply is also influenced by these same factors and shows the same peculiar irritability that marks the nervous system in general in this disease. Added to this are the compensatory changes which occur between the two lungs as a result of the contraction of the areas most severely diseased and the enlargement of the portions that are relatively healthy. The mediastinum is displaced, the heart is drawn over to the side of greatest contraction, unless it is bound down by adhesions, and in either case it is obliged to work at a great disadvantage. In spite of this and in spite of the abuse to which the organ is usually subjected through overexertion by the average advanced tuberculous patient, the heart usually bears up well. It must be understood, however, that the heart in advanced tuberculosis is usually working on its reserve power; hence should be especially favored until it has become fully adjusted to the new conditions surrounding it.

The disturbances on the part of the digestive system are extremely interesting. They are very complex from the standpoint of causation, and in their severest phases are exceedingly difficult to overcome. The secretory, motor, and absorptive functions of the digestive tract, as well as the further elaboration and final assimilation of the digested food, are all deleteriously influenced. In small lesions the amount of disturbance is slight, but in advanced cases we find, among others, the following factors each contributing something toward the prevention of a normal harmonious action: The effect of deficient oxygenation; the effects of the various toxins upon secretion and motility; the reflex stimulation of the vagus, due to the fact that the respiratory ends of the vagus are irritated by the inflammation in the lung; the disorder of function due to the disturbance in the action of the diaphragm; and the effect produced by the lack of cell tone and general muscle waste.

The nervous system is profoundly influenced through both the general toxemia and the general cellular disturbance which affects all organs. Aside from this, there is a direct influence on all nerves that come in direct connection with the nerves supplying the inflamed lung, producing such symptoms as hoarseness through the recurrent laryngeal, digestive disturbances through the gastric portions of the vagus, and the disturbance of the heart through the cardiac portion of the same nerve. Then, there is another phase of dis-

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turbance shown reflexly in those nerves which take their origin from the same segments of the cord that receive impulses from the sympathetics supplying the lung. The changes in these nerves sometimes amount to a true neuritis, and the effects are shown in sensory, motor and trophic changes in the parts supplied by them.

The muscular system suffers owing to deficient oxygenation, also from toxemia and as a result of the disturbance of the nerves supplying it. All of the important organs of the body are likewise disturbed in their function.

With the above picture of advanced tuberculosis before us we might be inclined to think that the prognosis is universally bad, but such is not the truth. While, of course, these cases are difficult and throw many obstacles in the way of cure, at the same time it is remarkable to see what can be done even in these advanced cases with patience and perseverance. Unless the patient is *in extremis* the chances of an arrest of the disease are very good, even though the case be advanced. If he cannot obtain a healing, he may be freed from annoying symptoms, and be privileged to live anywhere from many months to many years. Whether or not this will occur depends largely upon the intelligence of the treatment and the co-operation of the patient.

It is in the treatment of advanced tuberculosis that the physician's ingenuity is taxed to its limit and the patient's co-operation is put to the severest test. With the heart, the digestive system, the nervous system, and, in fact, the entire body burdened as I have mentioned above, the problem is far from being an easy one; nevertheless the reactive force of the human economy is such that it often comes to the rescue of these patients even after the body has been severely taxed. It is not sufficient to apply the correct treatment, but it must be applied under ideal conditions. If there is any form of tuberculosis that should be treated in institutions, it is the advanced form. These patients for the most part become more or less neurasthenic. They are inclined to be irritable at times; they have all kinds of complications, first on the part of one organ and then on the part of another. To handle these successfully, half the battle has been won when the patient is taken away from his home and surrounded by trained attendants. The treatment in advanced tuberculosis consists, first of all, in creating an atmosphere of hope and optimism; surrounding the patient with a spirit of cheerfulness and determination to get well; placing him in such a frame of mind that he will co-operate freely and do the things that are essential to cure. This psychic effect is seen in all instances in which patients are put under treatment in which they have confidence. It is a rule for patients entering a sanatorium to sleep well, although previously they had been spending restless nights; to have better appetites; to become less nervous, and to take upon themselves a feeling of well-being which they have not previously experienced. This comes before there has been any opportunity for the treatment to do good, and is simply the result of a better mental state. This is the same thing that the newspapers reported in nearly all instances where the Friedmann vaccine was used. Such announcements do not mean much to the physician who is accustomed to treating these patients, because he sees it constantly. The im-

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provement of the pathological condition is a much slower process and requires not hours, but weeks, months, and oftentimes years for its completion.

The second factor in the treatment of tuberculosis is a careful *régime* suited to the individual and carried out for a long time. What I mean by careful *régime* is not a routine method of treatment, but a method of treatment devised after the patient has been carefully examined, and after all the various factors that are contributing to his physical deterioration have been studied.

It must also be borne in mind that tuberculosis is a chronic disease. The changes which take place, whether the patient goes on to a cure or whether he goes down to dissolution, are slow. Failure often comes from giving up too soon. There is no necessity for giving a hopeless prognosis and ceasing our endeavors on behalf of the patient as long as he is able to digest and to assimilate food and the heart is capable of performing its functions. I have seen patients after running an elevated temperature for many months finally reach normal after the diseased tissue had been destroyed and cast off, and then regain their strength and weight and attain to a degree of health that seemed impossible. To obtain such results has often taken many months, but the time expended was well worth it. I remember several instances in which, had we interrupted treatment at the end of nine months or a year, we would have failed, but, by keeping up the treatment, at the end of two years we had an arrested condition and a renewed lease on life.

In the management of these advanced cases, aside from optimistic suggestion, I would urge two lines of therapy. These patients should be in the open air. Every organ and system of the body should be studied carefully. The heart, the alimentary tract, the respiratory passages, the nervous system should all be painstakingly looked into, and wherever there are difficulties these should be corrected if possible. Good food should be supplied and a most careful hygienic *régime* instituted. These factors act directly upon the patient. They increase the activity of his cells; they enable him to respond better in providing a proper defense. Another important measure in treating these cases is tuberculin. As I mentioned in my recent book, "Tuberculin in Diagnosis and Treatment," "While I have been an ardent supporter of tuberculin, I have always reinforced it by every measure that would improve the physical and mental condition of the patient. The injection of tuberculin is not treating tuberculosis. Tuberculin acts only on the tuberculous process, and thus affects the general well-being of the patient indirectly; general hygienic and tonic measures and those which improve the mental condition of the patient, on the other hand, affect every organ and function of the body, and act upon the tuberculous process indirectly. The two are supplementary and both essential to best results."

While there is serious objection to inexperienced men treating these advanced tuberculous patients with tuberculin, I am sure that those who have had experience in the use of tuberculin and in the treatment of tuberculosis should be able to use this remedy to their great benefit. The treatment of the advanced tuberculous case with the expectation of producing a good result

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requires care, patience and extremely good judgment. It is a problem, not for the general practitioner, but for the specialist in tuberculosis. I desire to make it clear, however, that even advanced tuberculosis is not beyond hope. Practitioners in other fields do not give up a patient because he is seriously ill. When called to a case of typhoid fever when the patient is extremely low, the efforts are doubled, that a cure may be brought about. When a surgeon performs a serious operation he uses greater caution than he would if it were a simple case. So must it be in the treatment of advanced tuberculosis. The difference here lies in the fact that tuberculosis is a chronic disease; the effort must not be made for a day, for a week, or for a month, but for many months and sometimes years. The time is long, the difficulties and discouragements are many, but when life has been prolonged or healing attained the repayment is ample for both physician and patient.

DISCUSSION OF THE PAPERS OF DRS. EVANS AND POTTENGER.

Dr. Spencer L. Dawes, Albany, heartily agreed that the physician should see that his patient received individual medical attention. It was not sufficient to send these patients to California or Colorado, or elsewhere. If one had to choose between care without climate and climate without care he would do well to choose care without climate. Each patient should have individual treatment.

Dr. F. E. Stewart said he was also of this opinion. He had visited Dr. Pottenger's sanatorium, and could testify that much of his abundant success was due to the careful personal attention that he gave the patients individually.

Dr. Osborne expressed appreciation of the papers presented. He agreed with Dr. Pottenger as to the value of tuberculin. Latent tuberculosis was always with us. One way to lessen the number of cases was to secure an earlier recognition of and give proper treatment to possible acute cases. Every patient recovering from pneumonia, typhoid or other diseases, and even those suffering from slight debility, should be carefully watched. In tuberculosis one should never give up. Recovery had occurred in cases that had seemed absolutely hopeless.

Dr. J. W. Chappell, Washington, D. C., agreed with this. The physician could learn a lesson from the very persistence with which these patients held on to life. They lived along from year to year and some of them managed to recover even when left alone. Several years ago he had noted that one lung of an apparently healthy man, whom he was examining, was inactive. Inquiry disclosed that twenty years before, the man had had "lung trouble" but had recovered without treatment. Tuberculous patients should never be given up. The endeavor should be to see that each one received careful personal medical attention. As to incipient cases, whenever he had a patient who was running down steadily without any *known* cause he strongly suspected tuberculosis.

Dr. John Blake White, New York, emphasized the importance of an early diagnosis and treatment. The recognition of the disease in its incipient stages required careful study. Any symptom or manifestation that might point to tuberculosis should be carefully noted, and the warning heeded. Once the diagnosis had been made in the early stage, and the proper treatment instituted, the outlook for the patient was more favorable in many cases. He regarded the careful observation of the thermic bodily changes as an important clinical feature of early tuberculous advance, for this symptom was the first and great distinctive clinical evidence present, when respiratory conditions could be discerned only by the most skilled auscultation. In some instances even this would not reveal the presence of an insidious tuberculous invasion.

Dr. Kinyoun said that the management of tuberculosis was a nice problem. It took two to make a bargain. The physician could make the diagnosis and prescribe the

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treatment, but it rested with the patient to carry it out. There was no doubt as to the importance of early treatment, but as a matter of fact it was seldom that an incipient case came to the attention of the physician. He had enjoyed Dr. Evans's description of the California climate and conditions. Even the climatic treatment of tuberculosis, however, had its limits. All of the patients could not be "turned out to graze." If they could, the population of some of the Western States would be like that of Nebuchadnezzar's ancient Babylon. Some patients, especially in the later stages, were best treated at home. He had seen patients in the late stages of the disease go to California and melt away in a short time. On the other hand, the disease could often be arrested in its earlier stages. But any form of treatment that failed to restore the patient to his former physical condition fell short; for example, one that only enabled the patient to live and do light work in the place to which he had been sent, but not to return home, was a mere apology for a cure. All cases were not suitable for treatment away from home, but whether at home or elsewhere the patient should have careful medical attention.

Dr. Morris inquired whether physicians had experienced any difficulty in getting tuberculous patients to take treatment early on account of the euphoric state characteristic of the disease. Surgeons were accustomed to send some of their patients (with tuberculosis of the knee, for example) to an altitude of three thousand or four thousand feet, and then to the sea-shore, and then to the mountains again, keeping this up for the beneficial effects upon the blood, circulation, and the hyperleucocytosis which followed changes in elevation, but so far as he knew this method had not been adopted or discussed by medical men. He requested information upon this point.

Dr. Pottenger said that the important point in every case was personal treatment and individualization. Skilled personal treatment was the desideratum wherever the patient might be. Many patients did better away from home than at home. The beneficial effects of change of surroundings, freedom from care and worry, association with optimistic people, a suitable climate, etc., were well recognized. Answering Dr. Morris, he said that the method referred to was impracticable in the case of consumptives. The only salvation for these people was to find some physician in whom they had confidence and stick to him. Changing and moving round from place to place was fatal.

CURRENT DEVELOPMENTS AND PROBLEMS IN VACCINE THERAPY.*

By A. PARKER HITCHENS, M.D.,

GLENOLDEN, PA.

There is a growing feeling in the medical profession that vaccine therapy has reached the point at which its value and its limitations may be clearly defined. Vaccines are coming to be considered as the chief resource in the treatment of certain infectious conditions. Diseases caused by bacteria may be divided into three classes in regard to their relation to bacterial vaccines: (1) those in which the vaccine meets every therapeutic requirement; (2) those in which its effects, while encouraging, are more or less uncertain; (3) those in which it is of little or no value.

Theoretical objections to the use of vaccines therapeutically have been based upon the fear that injections would "add fuel to the fire." According

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* Abstract of paper read at the Fourteenth Annual Meeting of The American Therapeutic Society, held in Washington, D. C., May 5 and 6, 1913.

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to Dr. Theobald Smith the difficulty of reproducing in laboratory animals the exact conditions of chronic infectious processes in man is responsible for the inadequacy of current theories to explain the beneficial effects of vaccines.

The writer is of the opinion that the present limitations of vaccine therapy may be widened by further investigation. Such investigation would include attempts to improve the antigen, and increased emphasis would be placed upon some phases of the work which are in need of development.

Preparation of Vaccine.

Efforts to improve upon the methods of preparation of bacterial vaccines should be directed as follows:—

1. To obtain a purer antigen.
2. To obtain a vaccine which will cause a minimum of local and general reaction.
3. To obtain a vaccine which will render the subject immune within the shortest possible space of time.
4. To obtain, if not a purer antigen, at least one in a state more readily available when brought into contact with the tissue.

The use of smaller doses than were formerly given has brought the local and general reactions down to such a degree that they are almost negligible. Our purpose is, however, to do away with the reaction entirely, retaining at the same time the immunizing response. To do this several methods come under consideration. It has been observed that bacteria grown upon media containing peptone are more prone to cause reactive phenomena than bacteria grown upon media without peptone. Consequently, two methods are used to free the bacteria of peptone—first, employing culture media containing no peptone; second, washing the bacteria in saline solution in a centrifuge. In connection with these two methods consideration must always be taken of whether the lack of peptone in the media interferes with the antigenic properties in any way and whether the washing process removes any essential part of the bacterial cell.

Autolyzed Bacteria.—Rosenow[1] has shown that when bacteria are suspended in saline solution the latter becomes very toxic as a result of autolysis. He has demonstrated that in the case of the pneumococcus the toxic autolysate is not necessary for the production of immunity, confirming the statement of Vaughan that the poisonous part has no relation to the antibodies which make the system refractory to disease. This suggests the possibility that by autolysis we may obtain a purer antigen.

Vaughan's Split Products.—After bringing about the chemical splitting of the protein molecule into a poisonous and a non-poisonous part, Vaughan believes that the poisonous part is a poison, and nothing but a poison, and takes no part in antibody formation, while it may add to the toxemia already present. If from the vaccine we can eliminate the poisonous fraction, we may be able to administer much larger doses of antigen without fear of a negative phase.

[1] Jour. Inf. Dis., 1912, vol. x, pp. 113-128.

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Antigens.—Some of the methods now employed for the preparation of antigen to be used in the complement fixation reaction may prove efficient in the preparation of vaccines, though it is probable that the combining substances of the antigen are chemically related to the lipoids, while the substances that have to do with the formation of antibodies are proteins.

Nucleoprotein.—Efforts to obtain the intracellular toxins and to isolate the nucleoproteins from bacteria have shown that the extracted nucleoprotein is a highly efficient vaccine.

Digested Bacteria.—Hirschfelder[2] has prepared a vaccine by the partial digestion of bacteria, and has obtained encouraging clinical results. There are certain difficulties in this method, as it offers great possibilities for variation and the biproducts of digestion are not eliminated—a point which might be important if the hydrolyzing process should reach a certain stage. This vaccine is thought to belong to the class that contains the antigen in a form more readily available for the tissues. The question arises whether the profound reactions following the use of such vaccines may not be largely responsible for clinical improvement, and whether similar results would not follow the administration of a solution of peptone.

Some of the methods given above may prove practical for the production of vaccines from sporogenic bacteria.

Sensitized Vaccines.—Sensitized vaccines have been used since the work of Babès (1891) in attempts to secure immunity quickly against rabies, diphtheria, hog erysipelas, plague, and anthrax. The results of this work show that the aptitude to elaborate active immunity and the duration of immunity are in inverse ratio to the quantity of serum in the mixture.

A decided advance in this line of work was made when Besredka[3] suggested the removal of the excess of serum by washing the sensitized bacteria in a centrifuge. Washing does not break up the union between the bacteria and their antibodies. Such sensitized bacteria should in theory be more easily handled by the tissues, as the body contains complement and the addition of complement alone is needed to bring about the disintegration of the bacteria. The technique of the preparation of sensitized vaccine as at present used in the Pasteur Institute is given by Broughton Alcock.[4]

Since the publication of the method by Besredka, it has been adopted by other workers for the preparation of vaccine for rabies, hemorrhagic septicemia in cattle, tuberculosis, typhoid fever, Asiatic cholera, bubonic plague, etc. Sensitized vaccines are to be preferred in the treatment of hemorrhagic septicemia in cattle, because, in an epidemic, if the ordinary vaccine is injected into an infected animal in the incubation period of the disease, it is likely to hasten the death of the animal; or if vaccine is injected into an exposed animal, the animal is more likely to contract the disease during the negative phase.

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2 Jour. Amer. Med. Assoc., 1912, vol. lix, p. 1373.

3 C.-r. Acad. des Sci., 1902, vol. cxxxiv, p. 1330; Annales de l'Inst. Past., 1902, p. 918; Bull. de l'Inst. Past., 1910, p. 241; *Ibid.*, 1912, No. 12, pp. 529-540.

4 Lancet, 1912, vol. ii, Aug. 24th, pp. 504-508.

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Work with living sensitized vaccines in typhoid has not shown that this method is preferable to the ordinary method. Before living germs are used generally, we must have more evidence to show that danger of making typhoid carriers does not exist.

As bacteria sensitized by the serum of immunized horses are as potent in their ability to sensitize the persons injected to horse serum as is horse serum alone, it would appear advisable to use the serum of some other immunized animal.

While for some infections sensitized vaccines will still be found best, yet for the treatment of mild staphylococcus infections, and for immunization against typhoid fever and cholera, except during epidemics, Wright's method is satisfactory.

Autoserotherapy.

The chief point in favor of autoserotherapy is that the bacteriological diagnosis is made automatically. Since the work of Debove and Raymond in 1891, autoserotherapeutic methods have been used for the treatment of many conditions, with varying results. With proper bacteriological control, the method has much to recommend it, but in practice there is much careless and faulty technique which must be condemned. Specimens must be collected with every possible care into properly sterilized vessels, and the filtrates made immediately, so that no opportunity is given bacteria having no relation to the infection time to develop and possibly to elaborate harmful toxins. Filtrates from an infection in any way connected with the intestinal canal are especially dangerous, on account of the possible presence of the tetanus bacillus. The filtrate should not be injected under any circumstance until the absence of tetanus and other toxins has been demonstrated and until sterility has been ascertained by bacteriological control. Oral administration of filtrates or diluted pus is to be avoided. Closely related to the faulty autoserotherapeutic methods is the so-called short method for the preparation of autogenous vaccines by which bouillon or another fluid culture medium is inoculated with infectious material, incubated overnight, and used after no other treatment than shaking and heating to 60° for a short time. Such a procedure should be permitted only for cases demanding great haste which are caused by a single bacterial species.

That in autotherapy methods the vaccine may contain bacterial derivatives that would not be included in a vaccine prepared by the ordinary method cannot be denied.

Anaërobic Bacteria.

Undoubtedly some of the failures of vaccine therapy are due to the fact that the vaccine used does not represent all the bacteria responsible for the infection, and an important class of those commonly left out is the anaërobes. These are frequently found associated with aërobic micro-organisms, but they have been omitted in the preparation of vaccines because of the difficulty of isolation and of growing in sufficient bulk, and because it is commonly believed that anaërobic bacilli are nearly all sporogenic. As spores are not

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killed at 60°, the resultant suspension would be dangerous, while a temperature high enough to kill the spores would destroy the specific antigen. There is, moreover, a general ignorance concerning anaërobic bacteria and their relations to regional infections. Most of these difficulties may be overcome. Innumerable easy methods have been devised for growing anaërobic bacteria. Of the 93 species of anaërobic bacilli mentioned by Jungano and Distaso, 46 are non-sporogenic; 15 of the non-sporogenic anaërobes are virulent for laboratory animals and many have been isolated from regional infections. It is therefore to be hoped that future studies of mixed infections will take into account the anaërobic bacteria present.

Sporogenic Bacteria.

Systematic work upon the problem of obtaining antigenic substances from sporogenic bacteria is needed. The efforts that have been made so far to use various bacterial derivatives as vaccine may be utilized as a basis for such work.

Regional Infections.

Each exposed region of the body seems to offer soil peculiarly favorable to certain organisms. The number of species found in each locality is surprisingly small. Why in parts open to the invasion of many forms of bacterial life a few classes survive, while others fail to gain a foothold, is interesting matter for speculation. While ordinarily a balance of action probably exists between the bacteria and the tissue, so that neither disturbs the other, any disturbance of the equilibrium may allow the so-called normal bacteria to acquire added virulence and to exert pathogenic activity. Vaccine treatment of such an infection is a problem because diagnosis is difficult, as it is not possible to select one of four or five different species and declare it the offending organism. Moreover, Allen has shown that the true infecting organism may escape detection upon the first examination. The bacterial flora may be added to at any minute, but the additions are limited in number and we know what they are likely to be. Treatment for one type does not preclude the possibility of subsequent infection by others.

The rational treatment of infections of exposed parts of the body requires the use of suspensions containing a mixture of all the germs taking part in the infection. An objection which has been made to the method is that the list of bacteria included would be too long, but it has been shown that the number of different kinds of bacteria is sufficiently small to make a mixed vaccine containing them all entirely practical. The objection that such a mixed vaccine would encourage the physician in the neglect of proper bacteriological diagnosis prompts the question of how many such diagnoses are made at the present time. It is believed that the contemplation of vaccine treatment will lead to a desire for greater accuracy of diagnosis. The fact must be emphasized that the type of infection to which the use of mixed vaccine is adapted is one in which a number of offending organisms take part,

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such as the common cold, and is not an infectious disease of definite etiology or symptomatology such as diphtheria or scarlet fever.[5]

The above does not excuse the mixture of various kinds of bacteria for the production of pan-immunity. There are definite reasons for the presence of each organism in the suspension.

Mixed vaccines containing the typhoid bacillus and the two paratyphoid bacilli, A and B, are entirely justified in immunization, as typhoid and paratyphoid fevers are so similar that immunization against the three infections at the same time is unquestionably a rational procedure. Such a mixed vaccine was first suggested by Castellani in 1902, and its use has been continued by others. Castellani demonstrated that upon inoculating an animal with two different bacteria at the same time the blood produced agglutinins and immune bodies for both, and that the amount of agglutinins and immune bodies was about the same as in animals inoculated with one germ only. To determine the antibody formation caused by mixed vaccines the author, in collaboration with Mr. George Hansen, studied the effects of single and mixed typhoid vaccines upon rabbits, and demonstrated that there was satisfactory antibody formation to each of the antigens, although there was slightly less typhoid agglutinin formation in the rabbits that received the mixture than in those that received typhoid vaccine alone.

A third purpose in the use of mixed vaccines is for immunization before operation. Here a mixed vaccine containing the bacterial species most likely to cause infection of the wound should be used. Before abdominal operations, especially if infection is present, a mixed vaccine similar to that suggested by Dr. Van Cott, of Brooklyn, is indicated, provided sufficient time is available for its use.

Finally, it is the opinion of the writer that the potentialities of vaccine therapy in typhoid fever will not have been exhausted until a mixed vaccine is used in treatment.

General Considerations.

Although the attempts of bacteriologists to obtain more efficient vaccines seem to imply that it is necessary to obtain a more efficient antigenic substance, a consideration of Wright's work suggests the possibility that efforts should be made in different channels. As Wright's work has demonstrated that bacterial vaccines will cause the formation of specific bacteriotropic substances, failures to cure disease do not rest upon the failure of the vaccine to cause the tissues to produce antibodies, but rather upon the power of pathogenic bacteria to reach the tissues under certain conditions and to resist the

[5] To the objection that mixed vaccines are shot-gun prescriptions, we may answer that it is only with a vaccine made from a combination of bacteria that we can fight against a condition brought about by a number of invading organisms. In reply to the further objection that the cells locally will be overwhelmed by the great variety of antigens, so that the antibody formation for each will be much lower than when a single antigen is employed, we must emphasize the fact that we are merely trying to increase the resistance of the person treated, and we believe that some increase in resistance to all the infecting bacteria is preferable to high resistance to one.

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action of the normal antibacterial substances. They do this by chemical means—toxins and other products of bacterial growth—and by physical means —the pathological changes characteristic of the lesion. To overcome the chemical defense, antitoxins and antiserums have been devised. In the injection of vaccines, however, the chemical defense of the infecting agent interferes only slightly in the successful treatment of the disease.

To overcome the mechanical defenses, it is necessary, in the author's opinion, to study the relation of the infecting bacteria to the blood- and lymph-supply. The reason for failure in vaccine therapy is not that specific antibodies are not formed, but that they are not permitted to come into contact with the infecting bacteria. Wright, in a chapter in "Studies on Immunization,"[6] has pointed out a number of accessory methods by which the flow of blood to the infected part may be increased.

The author suggests that there may be materia medica preparations which, if properly used, would be of as much accessory value as the mechanical devices suggested by Wright. He asks if there are not drugs which will cause temporary flushing of the infected part, or will renew the blood locally in cases where it is stagnated, or will cause, at a time when the content of the blood in antibodies is greatest, a temporary local congestion resulting in a hypersecretion of mucus and outflow of lymph.

DISCUSSION.

Dr. Osborne inquired with regard to the value of stock antistreptococcic and antistaphylococcic vaccines in pneumonia and urethritis.

Dr. F. E. Stewart, Philadelphia, suggested that some of the good results reported after antityphoid inoculation might be due, in part at least, to modern hygienic methods, screening from flies, etc.

Dr. Kinyoun said that he could not fully agree with Dr. Hitchens as to the use of mixed vaccines. His experience with them had been unsatisfactory. The best results were obtained from individual strains. The secret of success lay in determining the cause of infection in each case as nearly as possible, and then acting accordingly. There was no doubt but that a great advance had been made in the prevention of typhoid in the army by the introduction of antityphoid inoculation. Among the people at large, however, the reaction caused by the injections interfered with its usefulness. People were loath to submit to vaccination, and still more loath to submit to antityphoid inoculation, particularly after they had had one injection. Some way should be found to lessen the unpleasant effects of the first dose.

Dr. Hitchens said that, according to W. E. Robertson, who had had considerable experience in this line, the vaccines were of value in pneumonia. Not infrequently they failed, however, and it was impossible to predict when failure would occur. He had felt as Dr. Kinyoun did about the use of mixed vaccines until after he had had considerable experience with them, and he had waited before expressing his views until he had become convinced that his conclusions were fully justified by the results. A hodge-podge or shot-gun vaccine could not be condemned too severely; but in some cases of mixed infection the indications were clear, and mixed vaccines could be used to advantage.

Dr. Osborne asked Dr. Hitchens whether he had had any experience with antirheumatic vaccination.

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[6] New York, Wood, 1910, pp. 452-455.

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Dr. Hitchens replied that he had had no personal experience with it. If, however, rheumatism was caused by a specific microbe and that microbe was employed in treatment, he believed that a clinical result could be obtained, provided that the antibodies came into contact with the infecting bacteria. Therein, however, lay the difficulty.

THE PRESENT STATUS OF MENTAL SUGGESTION.

By JOHN D. QUACKENBOS, M.D.,

Author of "Hypnotic Therapeutics"; Fellow of the N. Y. Academy of Medicine; Member of the London Society for Psychical Research, etc.,

NEW YORK, N. Y.

It has long been a widely prevalent belief that the functions of the physical body and the motions of the objective mind are under the control of a higher human spiritual principle—a control which, when relaxed or unexercised, may be evoked by what is known as suggestion, along lines that are regulative and healing in the one case, and in the other nature-changing, character-building, and prodigally creative of that incorporeal force which tends to fashion man's earth-life on more exalted principles.

Now, what is suggestion? It is nothing but a straightforward, dynamic appeal to the subliminal self, the source of spiritual energy in man's being. It is vastly more than good advice which the subpersonal mind is glad to accept. It is of the nature of *creative communication,* a calling forth into overpowering action of the godlike in the man—action that carries all before it in the objective life. And *rapport,* the peculiar harmonious relationship between operator and subject, is only a realization by the latter of sympathy on the part of the suggestionist, with confidence in his judgment, purity of motive, and power to inspire.

Suggestion, then, is to be regarded as a means whereby the man in need is apprised of the efficiency within him, and when so enlightened is inspired to come to his own aid and work out his own salvation in his own everyday life without conscious effort or constraint. I would lay special emphasis on the fact that he is not constrained by the will of the suggestionist. He does what ought to be done of his own free impulse, in response to an inspiration rendered irresistible by its conformity to expedience and truth.

The secret of suggestion is to stimulate that output of spiritual energy which overwhelms the antagonism of the will and automatically compels in the intelligent creature adjustment to the law of right. Thus the theory that one man's will can be forcibly subjected to another man's will either in or out of sleep, or that his objective will can, in actual conflict, prevail against the divine potency in the man, is inconsistent with an exalted conception of the inherent dignity and worth of human nature.

It happens to be a psychological fact that in a state of ordinary sleep or abstraction—which may be variously induced—when the brain is inactive, the subliminal self may be brought into control of the earth-life, and the

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maximum benefit from suggestion secured. The sleeping subject is constrained after waking to obey the impulses of his own superior self, thus set in motion by a qualified fellow-being. The beautiful feature of such suggestional treatment is its unequivocal naturalness. It has naught to do with mesmerism, odyllism, or hypnotism as popularly understood, in which a low stratum or fallible phase of the personality is addressed, and the subject exposed to deception and injury. In natural sleep, the higher personality is reached, with its keen insight, inflexible principle, and limitless capacity.

Now to what forms of disease is this treatment applicable? Little need be said regarding its value in the treatment of physical maladies. Its efficacy here is everywhere conceded.

From the physical viewpoint, hypnosuggestion has for its aim the restoration to perfect fulfillment of functions that are disturbed or half-performed, through its regulation of the ordinary processes of digestion, metabolism, circulation, and innervation in general. Errors in assimilation may be corrected, and nutrition made perfect in fields where it is defective. Pain is controllable, childbirth may be robbed of its pangs, and minor surgical operations have been successfully and painlessly performed on hypnotized subjects.

My space limit forbids anything more than mere mention of the appositeness and potency of suggestion in the treatment of delusions, exaggerated worries and hallucinations; of remorse for supposed unpardonable sins; of morbid fears, apprehensions, and doubts; of unlawful infatuations and uncontrollable impulses; of hauntings by phantoms, persecutors, and preposterous notions; of psychoneuroses and incipient insanity.

The subject is often aware that the imperative notions are morbid, that he is the dupe of delusions, but he cannot control them. The atrocity-mongers of sensational newspapers, by their revolting exaggerations of vicious and criminal deeds, have not a little to do with the induction of these harrowing states. Sensitive subjects apply what they read to their own cases, often feel impelled to act accordingly, and are prostrated with fear lest they be tempted to commit similar crimes.

A common delusion is fear of approaching insanity, with no ground whatever for the belief. Another is the hearing of sinister voices that urge through imaginary telephones the commission of horrifying acts.

In the case of more serious mental disturbance, there is no doubt that much good can be accomplished if it be treated in its incipiency. Hallucinations, exaggerated worries, unreal anxieties, hypochondriacal fears, and various forms of morbid disposition or extravagant passion, that are quite sure, unless removed, to gravitate into permanent aberrations, may be held in abeyance by congenial suggestions until the mind regains its poise. It is generally conceded that asylums for the insane are filled with inmates who might have been saved from such entombment had they been thus opportunely treated.

My own experiments have had largely in view the application of suggestive treatment in cases of moral obliquity and in the development and exaltation of mind power. Let me here insist that it is because ethical force is poten-

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tial in every human being—it is because men are not sinners by constitution—that successful appeal may be made to the subliminal self in states of unstable moral equilibrium. My patients are not impelled to do things posthypnotically because I urge them to, but because they are brought into view of the truth, and apprehend that what they are inspired to do is incontrovertibly right.

The cases of moral import successfully dealt with through the influence of unused mind power include:—

Cigarette addiction and the disturbed mentality of nicotine poisoning.

Drink habit.

Kleptomania, habitual falsehood, pseudomania, hopeless dishonesty, mania for swindling, pawning, and gambling.

Secret vices and sexual aberration.

Disobedience, viciousness, and degeneracy in children.

Spiritual inability and general moral impotence.

The readiness with which these conditions yield to the power of the suggestionist—the fact that human character may be transfigured in a single hour by a human instrument—is most remarkable. And it cannot be too often insisted on that the possibilities of subconscious crime dance upon nothing. *There is no such thing as a subconscious criminal.* No proof exists that a crime has ever been committed through the instrumentality of suggestion, which is valueless as an agent of temptation in the honest and clean. Thus, fortunately, the power of suggestion for evildoing is limited, while its influence for good is without horizon. Whereas, for instance, it is easy to restrain a kleptomaniac, it is hardly possible to make an honest man steal by urging him in hypnosis to do so. Criminal acts, if suggested, will not be post-hypnotically committed by persons of balance and principle. All suggestions out of harmony with moral convictions, common-sense, and the wholesome life habits of the subject, are likely to be futile.

Man in his higher personality is adequate to the extirpation from his objective nature of any abnormal craving or passion, like the craze for alcoholic drink. Dipsomaniacs, as a rule,—and I have treated about 1000 cases with 75 per cent. of cures,—are easy subjects in that they yield readily to the suggestional influence and accept unconditionally the directions communicated by the operator. The patient frequently recognizes his danger, and sincerely wishes to be cured. He is tactfully conducted into the subliminal sphere, and then assured that, in accordance with his own desire and decree, he has lost all craving for beer, wine, whisky; that alcohol in any form will disgust him, and, as a safeguard, that he cannot swallow it, cannot carry the containing glass to his lips. The society of low companions is tabooed; the pleasures associated with drink and the glamor of the bar-room are pictured as meretricious and placed in vivid antithesis to the chaste delights of home life. The physical, mental, moral, and economic bankruptcy that accompanies dipsomania is held up before the view of the sleeper, and he is forced to the conviction that, begotten of this apprehension, there has come into his soul an abhorrence for drink and all that it stands for. He realizes the presence of efficiency within him adequate to the enforcement of radical abstinence as the principle

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of his life; and he is rendered insensible, for the future, to any such combination of passion and allurement as has usually constituted temptation. So he is led instantaneously to scorn recourse to alcoholic stimulants or to extrinsic exaltation of any kind, either for convivial reasons or in times of depression, misfortune, or sorrow, and to depend exclusively, under any mental or physical strain, on the units of energy legitimately manufactured out of nutritious food, non-intoxicating drinks, air, exercise, and sleep. The subpersonal mind is then directed to the vocation or the avocations, or both, as circumstances suggest, and a career of wholesome activities and satisfactory success is imaged as the legitimate result of the abandonment of the compromising habit.

In all hypnology there is nothing more thrilling, and to the novice more incomprehensible, than the evocation of natural endowment by suggestion—the sudden awakening of dormant genius. In educational work the value of suggestion can hardly be overestimated. Child study, from the standpoint of its application, is a duty of the hour which can no longer be excusably ignored, either by teachers themselves, or by those whose life-work is the preparation of teachers for a profession demanding the highest intelligence and involving the greatest responsibilities. Not only may dull minds be polished, unbalanced minds adjusted, gifted minds empowered to exploit their talents, but the educating intellect of the school-child may tread that royal road to learning which ancient philosophers sought for in vain; the matured mind of the scholar may be clothed with perceptive faculty, with keenest insight, tireless capacity for application, unerring taste; and the imaginative mind of painter, poet, musician, discoverer, may be invested with creative efficiency in the line of ideals that are high and true. Judicious suggestion accomplishes the output of indwelling faculty, and the lesson of hypnoscience here is a lesson of man's susceptibility to limitless progression. I firmly believe that as an agent of physical cure suggestion will shortly come to be universally employed by trained nurses for the purpose of carrying their patients through the crises of disease. It will be used by physicians for antenatal suggestion. The influence of maternal impressions upon the nature of an expected child, if not perfectly understood, is universally admitted. The dominant ideas, delusions, and imperative fears of prospective mothers that menace the moral or mental health of organisms yet unborn should be eradicated without delay by the most careful treatment. Conversely, it may be possible through the same instrumentality to stimulate the intellectual germs, shape the moral propensities, and so determine the ethical and mental destiny, as well as the mere physical constitution, of the child awaiting birth.

The value of mental treatment has been demonstrated by physicians of worldwide reputation: Dr. Lloyd-Tuckey and Dr. Milne Bramwell, of London; Dr. Berillon and others in Paris, who have a school of psychology where public treatment is daily given; Dr. Grossman, of Berlin, who some time ago attended the Czarina of Russia, giving her psychic treatment; Prof. Forel in Zürich and Prof. Paul Dubois at Berne, Switzerland; Dr. von Velsen at Brussels, Dr. von Schrenck-Notzing at Munich, and Dr. von Renterghem and Dr. Van

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Eeden at Amsterdam, all employing mental suggestion in one form or another. In the United States the use of such treatment is constantly increasing among regular practitioners. The College of Physicians and Surgeons of New York has established a department of psychotherapy under Dr. Habermann, while prominent men in the profession, like Dr. George W. Jacoby, Dr. Henry S. Munro, of Omaha, and Dr. James J. Walsh, of New York, have recently published works on suggestion.

Cyclopedia of Current Literature

ADDISON'S DISEASE, ACUTE.

The author reports the case of a young man aged 21 years, previously always healthy, in whom a rapidly developing Addison's disease, with fatal termination in eighteen days, was witnessed. The symptoms appeared in the following order: A progressive fall in blood-pressure was first noted. Then there appeared muscular weakness and evidences of some form of intoxication, including vomiting. Finally, there was observed a distinct pigmentation, localized more particularly over the genitals, axillæ and mammary areolæ. There were also diffuse and more or less extensive patches of melanoderma on the abdomen and the thorax. The mucous membranes of the cheeks, palate, and tongue were deeply pigmented. Subcutaneous injections of large doses of epinephrin were given, but no lasting effects were obtained. The autopsy revealed, in addition to a former, mild tuberculosis of the lung, complete caseation of the two adrenal glands, with marked hypertrophy of an accessory adrenal, but no change in the solar plexus. A. Lippmann (Medizinische Klinik, April 6, 1913).

BURNS, TREATMENT OF.

In second degree burns, the application of dressings of sodium bicarbonate in saturated solution, or in a weak solution such as 5 grains (0.3 Gm.) to the ounce (30 Gm.), is considered useful by the author. An application of picric acid solution, however, consisting of 15 grains (1 Gm.) of the acid in 2 fluidrams (8 c.c.) of alcohol and 6 ounces (180 c.c.) of water, has given the best service. It should be applied to the wound on gauze, which should not thereafter be touched for three or four days. After this a second application of the same solution should be left on the part for a week or ten days.

The application of carron oil has the great disadvantages of not being aseptic and of being dirty. These can to a great extent be eliminated by using a modified carron oil, as follows:—

℞ Olei eucalypti, f℥iss (45 c.c.).
Olei olivæ, f℥xiv (420 c.c.).
Liquoris calcis, q. s. ad Oij (1000 c.c.).
M.

Phenol, ¼ to ½ grain (0.015 to 0.03 Gm.), may be added to each ounce of the above formula if the burn is very painful.

Of the ointments used for burns, ichthyol, 50 per cent., is one of the best. The author generally uses the following combination, with good results:—

℞ Ichthyolis, ℥j (30 Gm.).
Thymolis iodidi, ℥ss (2 Gm.).
Adipis lanæ hydrosi,
Petrolati, ää q. s. ad ℥ij (60 Gm.).
M.

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In third degree burns the treatment is practically the same. If the area is very large one may apply a warm saturated solution of sodium bicarbonate or one of aluminum acetate, the parts being kept constantly moist. Where the burnt area is very painful, the author usually irrigates the wound as thoroughly as possible with normal salt solution or a saturated boric acid solution, and when it is dry, applies a dusting powder.

After the acute inflammation has subsided, and the wound being clean, if it heals very slowly a dilute solution of silver nitrate is useful to stimulate the granulating surface. Balsam of Peru, 1 dram (4 Gm.) to 1 ounce (30 Gm.) of a 5 to 10 per cent. scarlet red ointment, has given the author good results in slowly granulating ulcerations. The ointment is applied very thinly at the margins of the granulating walls. The surrounding healthy skin should be protected by the application of some bland ointment, such as one of boric acid or zinc oxide. This dressing should be left on the surface for twenty-four to thirty-six hours only, and then some bland ointment applied to the whole surface and allowed to remain for two days. The scarlet red should then be reapplied. This ointment frequently brings on a dermatitis, and should therefore be used with care on the tissues which are already damaged. Where the destruction of tissue is great, early skin grafting by Thiersch's method should be resorted to, as this will lessen the deformity to a great extent, and the surface will heal in a shorter time. Frank Levinson (New York Medical Journal, August 16, 1913).

CARCINOMA OF UTERINE CERVIX, TREATMENT OF.

In operated cases later showing recurrence, the use of radium in large quantities (100 to 200 milligrams) offers definite hope, according to the authors, of adding to the percentage of "permanently cured" cases.

It has been applied to the disease with a view to curing it without any operation. An instance of this kind has been reported by Chéron. The patient, dying later of another disease, was carefully examined, and the cancer found to have been completely eradicated.

Radium may be used to irradiate the disease thoroughly before a radical operation, with a view to rendering innocuous any small foci of disseminated cancerous cells which may not be extirpated and which would inevitably bring about a speedy recurrence.

At the end of an operation, radium is inserted: (*a*) to wipe out any cancerous cells left at the base of the broad ligament; (*b*) in cases in which, relying upon the radium to destroy them, the operation has been conducted deliberately through diseased structures.

Finally, one of the most precious uses of radium is in early recurrences at the vaginal vault, or laterally out in the broad ligaments, to wipe out the disease.

The field of usefulness of radium is not limited, however, to these radical measures, for it is also serviceable, even where it does not cure, in restraining the disease, checking the secretions, and, above all, relieving the often distressing pains. Howard A. Kelly and J. Craig Neel (Bulletin of the Johns Hopkins Hospital, August, 1913).

CHOLELITHIASIS, SIMPLE METHOD OF TREATING.

The author having learned that in certain localities radish juice was used with success in the treatment of cholelithiasis, tested the matter for himself in the course of twelve years, with results so conclusive as to lead him to

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record them for common benefit. In all cases suitable for medical treatment radish juice was given, and 7 illustrative cases are described in which the use of this homely remedy was followed by complete disappearance of the attacks of hepatic colic. Either white or black radishes are used. They are ground up in a machine and the pulp thus obtained expressed through a piece of cloth. The resulting "juice" should preferably be taken fresh. The treatment may be begun either during or immediately after an attack of colic. On the first day a half-cupful is given, while later the amount is increased to a cupful and finally to 2 cupfuls. This amount is continued for two to three weeks, the dose being then gradually cut down until a half-cupful is being taken three times weekly. Most patients do not find the preparation unpleasant to take. In the majority of cases the author ordered the "cure" repeated several times during the year, even where no symptoms had been present. The *modus operandi* of the radish juice he is unable to specify, but he feels justified in recommending it as a safe and efficient remedy. Gramme (Medizinische Klinik, March 30, 1913).

CYSTITIS IN WOMEN, TREATMENT OF.

The mild cases of this affection will usually clear up under plenty of water and some alkaline diuretic, such as potassium citrate, and hyoscyamus or belladonna. With these it is well to give also hexamethylenamine, in the dose of from 15 to 40 grains (1 to 2.5 Gm.) daily. Absolute rest in bed with the bowels kept moderately loose will hasten recovery. Hot vaginal douches during the acute stage are often comforting. If the dysuria and increased frequency are so marked as to interfere with sleep, sedatives should be given freely.

As the acute symptoms subside, irrigations and instillations are valuable. The author irrigates twice daily with a one-half saturated (2 per cent.) solution of boric acid, and adds to this semi-weekly irrigations with 1:5000 silver nitrate solution, gradually increased in strength. For the instillations, 2 per cent. protargol or 10 per cent. argyrol are efficient. When there are isolated areas of inflammation, direct topical application through the air cystoscope is valuable.

The condition known as cystitis colli is a mild inflammation about the internal urethral orifice and trigonum, and is probably of gonorrheal origin. Direct applications of 10 per cent. silver nitrate solution once or twice a week are valuable. They should be followed up by alkaline diuretics.

Occasionally severe cases of non-tuberculous cystitis require the formation of a vesicovaginal fistula, with continuous irrigations for several hours daily in a tub of warm water, before relief is obtained.

Tuberculosis of the bladder in women is almost *prima facie* evidence of tuberculosis of the kidney. After the renal infection has been properly treated, the bladder will tend to clear up. Irrigations of 1:5000 mercury bichloride solution, or instillations of 1:500 or greater strength; silver nitrate in weak solutions, or 10 per cent. iodoform emulsion in glycerin, are helpful. Excision of ulcers or even curettage of the bladder is advisable in some cases. To these local measures should be added climatic, hygienic, and dietetic treatment, with the aid of which the prognosis can be greatly improved. F. Webb Griffith (Southern Medical Journal, July, 1913).

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ECLAMPSIA, TREATMENT OF PUERPERAL.

As the routine treatment in a case of toxemia of pregnancy in the later months accompanied by convulsions, the author advises the immediate injection of ¼ grain (0.015 Gm.) of morphine before anything else is done. The liability to convulsions from even slight external irritations is marked in these patients and by putting them at once in a condition of enforced quiet one can proceed with the other necessary measures without unduly arousing them. After the morphine has begun to exert its effects the patient's clothing should be removed anl certain eliminatory measures proceeded with. A soapsuds enema repeated if necessary until bowel evacuation has occurred is one of the first things to be done, followed by the administration of a concentrated saline cathartic where the patient can swallow, or, in the event that she cannot, the application of a drop of croton oil to the back of the tongue.

The patient should then be wrapped in a blanket wrung out in hot water, keeping her in it until perspiration has become free. These packs may be repeated at intervals of every two or three hours. If the proper indications are present at least a pint (500 c.c.) of blood may be abstracted from a vein in the arm, and to this loss of blood, if it occurs during the course of an operative delivery may, the author thinks, be ascribed in large part the good results of the latter. Dilution of the blood-stream may be accomplished by colonic irrigations with normal sugar solution, not less than 4 gallons at 115° F. being employed. In cases with considerable edema this measure may be delayed until after free perspiration has been secured by means of a hot pack.

After the irrigation has been completed, 30 to 40 grains (2 to 2.5 Gm.) of chloral hydrate dissolved in water may be administered by rectum; but if the patient can swallow, 15 to 20 grains (1 to 1.25 Gm.) may be given by mouth. Washing out the stomach in these patients may be resorted to, but will not always be found a simple matter.

At some time during these procedures a vaginal examination should be carefully made and the condition of the cervix determined. Efforts directed to the induction of labor are often surprisingly successful if the cervix is soft and dilated beyond two fingers, the membranes being then ruptured, full dilatation secured and the child extracted by version. In the cases where dilatation is not possible without a more extended procedure, one can safely resort to gradual dilatation by the Harris method even if this takes an hour or more, that is, where the patient cannot be sent to a hospital. As to the tendency of some to deliver women presenting convulsive seizures by vaginal or abdominal Cesarean section in the absence of other indications, the author states that in cases at or near term, with an elongated cervix and a large fetal head which does not manifest any tendency to engagement, an abdominal Cesarean section seems to offer a better chance for the mother and child than any other method of radical treatment. In a case at the seventh month, however,—this being accepted by many as the proper indication for vaginal Cesarean section,—one should proceed more cautiously, as, even if successfully delivered, such children often soon die of asphyxia or convulsions.

In the treatment of the high-tension pulse usually met with in eclamptic

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women, careful observation of the effects of the commonly used drug veratrum viride has shown that its employment is associated with some danger, as the depressing effects on the pulse are cumulative and cannot be controlled. Nitroglycerin, on the other hand, is much more evanescent in its effects and may be given safely in doses of 1/50 grain (0.0012 Gm.) every twenty to thirty minutes until the pulse tension begins to diminish, when it may be employed at longer intervals.

The treatment of eclampsia without convulsions is practically the same as has already been described. Just as great caution must be exercised in such cases as in those which are apparently of a much severer type. G. W. Kosmak (American Medicine, July, 1913).

EPITHELIOMA, TREATMENT OF, BY ETHYL CHLORIDE.

In cases of rodent ulcer and other forms of well-delimited cutaneous carcinoma the author points out the efficiency of treatment by means of ethyl chloride, which possesses over the X-ray, radium, zinc ionization, and solid carbon dioxide, the considerable advantages of easy application and availability to the practitioner without special training and apparatus. The freezing effect readily penetrates to the deepest parts of a rodent ulcer, and a comparatively exact localization and dosage are possible. The ethyl chloride is sprayed on the ulcer in the ordinary way at first for two minutes, the surrounding tissue being protected with cotton-wool. The treatment is repeated on the third day following, and afterward every other day, the application being gradually prolonged until the tissues are kept white and hard frozen for five to seven minutes each time.

The well-known tendency of cutaneous epithelioma to remain localized justifies the use of the ethyl chloride treatment for a few weeks without fear of metastasis. Should the treatment fail to give a satisfactory result, the affection will at any rate not have spread, but probably been considerably reduced, the conditions for another treatment having consequently been improved. The patient can attend to his business during the treatment and need take no other precaution than to keep the ulcer covered with a small aseptic dressing. There is but very little pain, lasting for a few hours only after each treatment. There is but little visible reaction of the immediate surroundings of the ulcer, and the author has seen no gangrene, though he has kept the tissue frozen for five minutes or more. Cases are reported by him illustrating the activity of the method in causing healing of the involved areas, with only a smooth, almost invisible scar as residue, and no recurrence. Harold Seidelin (Lancet, June 14, 1913).

ETHYL CHLORIDE, GENERAL ANESTHESIA WITH.

After many years' experience with this agent the author is of the opinion that by continuous administration of small amounts of it, using a special but simple technique which he describes, general ethyl chloride anesthesia may be prolonged beyond the customary short period without any danger. The anesthetizer should have at hand one tube of 50 c.c. or several of 10 c.c. of ethyl chloride, provided with the usual fine spray tips employed for local anesthesia. A compress or handkerchief folded to make 4 thicknesses, broad enough to cover the nose, mouth, and chin, is placed over the face in the form of a

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conical mask, the margins being closely applied to the skin surface while the center, upon which the ethyl chloride is to be sprayed, is kept a few centimeters from the tip of the nose. The spray tip of the tube is placed over the compress, the tube itself lying in contact with it and its other extremity resting on the patient's forehead. To prevent too rapid loss of the ethyl chloride, another compress is placed completely over the tube, the hand of the anesthetizer holding it, and the first compress. By drawing down the lever at the tip of the ethyl chloride tube the anesthetizer then sprays the anesthetic on the center of the compress, causing it to be inhaled regularly at each inspiration. The spraying is continued until anesthesia supervenes. If the operation is to be performed in the mouth or nasopharynx, compresses and tube are quickly removed, while if it is to involve other portions of the body, the inhalation is continued as before until the operation has been completed or a short period before this, analgesia often persisting a few minutes after the administration of the drug has been stopped. The amount of ethyl chloride generally used by the author has been 8 to 30 c.c., in a few cases 50 c.c. The longest anesthesias attempted were twenty to thirty minutes, and the usefulness of the method is probably limited to operative procedures that can be carried out within this period of time, though Boureau, using larger amounts, has been able to prolong the anesthesia even to forty-three minutes. Vanverts (Bulletin de l'Académie de Médecine, June 10, 1913).

FELONS, TREATMENT OF.

That a felon is primarily an inflammation of the connective-tissue space situated on the palmar surface of the last phalanx is pointed out by the author. He severely condemns waiting for suppuration to take place before opening a felon, delay causing the patient much pain, a wider destruction of tissue and frequently the loss of a portion of the bone. The incision he advises is a coronal one, *i.e.*, parallel with the nail, and only a short distance from it. It starts at the level of the base of the nail on one side and extends in the line of the skin furrows over the tip of the finger up the opposite side to a point level with the beginning of the incision, thus making a flap of the tip of the finger. A piece of rubber tissue or gauze impregnated with petrolatum is placed in the uppermost angle of the wound, and the latter dressed with normal salt solution. The dressings, which are kept moist, are renewed every day without removing the packing. On about the third day the rubber tissue will come away and no subsequent packing will be found necessary. The wound will gradually close and after several weeks the finger assume its usual size and shape.

With this method the scar is almost invisible, being in line with the skin furrows, and further does not impair the tactile area. Complete and free drainage is immediately obtained. If the patient is operated on early no loss of bone occurs, though if the case is seen after suppuration has appeared, it may become necessary later to snip off the diseased diaphysis, preserving the epiphysis. In opening the felon a general anesthetic (preferably nitrous oxide) is essential, so that a careful, complete and painless operation may be performed. G. M. Dorrance (Journal of the American Medical Association, May 10, 1913).

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FURUNCLES, TREATMENT OF.

Describing the treatment of an early, hard boil on the neck, the author advises that the skin wide of the boil be first shaved with a sharp razor free from nicks. Next this skin area should be bathed thoroughly, first with benzin and then with alcohol. After this a strong tincture of iodine or 3 per cent. alcoholic solution of picric acid should be painted over. Attention should now be directed to the boil itself. One should scratch the cap of the vesicle off with the point of a knife, boring a little into the center of the boil if the exposed orifice is no larger than the shaft of an ordinary pin. Next a Bier cup should be applied, and gentle suction permitted for three minutes. This should be repeated in four hours; it withdraws some of the infected fluids and bathes the boil with fresh blood. Dressing should be done with a drain-poultice made up of a piece of gauze saturated with a solution that is isotonic and prevents clotting of blood or of serum in the pit at the center. Such a solution is Wright's, consisting of sodium citrate, 1 per cent., and sodium chloride, 2 per cent. This moisture should be retained with waxed paper, and over the latter should be placed a cotton compress to equalize the circulation, secured with a muslin bandage. The patient should be instructed to keep the gauze wet with this solution. Under this method of treatment the boil expels its core in from one to four days, and heals up rapidly with a minute, scarcely visible scar.

Occasionally a very early boil may be aborted by injection of a few drops of pure phenol. If the boil be intolerably painful, it is a simple matter to infiltrate the regional cutaneous nerves with novocaine.

The only indication recognized by the author for incising a boil is where the infecting cocci have transgressed the defensive inflammatory barrier and set up a fluctuating subcuticular abscess, *e.g.*, if the boil has been squeezed, or if the central orifice of the boil has not undergone enough pressure necrosis to permit drainage or has become blocked by a clot.

To prevent furuncular recurrence one should make up or have made up an autogenous vaccine. The dose at the first injection should be 100,000,000 cocci. The injections should be repeated at intervals of four days, the dose being doubled each time, if the degree of constitutional reaction permits. P. G. Skillern (Pennsylvania Medical Journal, July, 1913).

GOITER, TREATMENT OF.

As regards the non-surgical treatment of goiters, the author states that there is no doubt but that many goiters, especially of the adolescent type, undergo natural resolution. The iodine treatment may have a favorable effect in young patients, but not so often after 30. Recent experience seems to indicate the use of thymol, phenyl salicylate and iodine as intestinal antiseptics. Thyroid extract is uncertain, but seems to have produced favorable results sometimes in the early treatment. In exophthalmic goiter temporary improvement has followed the use of the X-ray. The cytolytic agents for specific action on the thyroid have not fulfilled expectations.

The occasional large goiter of the cretin has but little active parenchyma and should be removed. The author has not seen any permanent success from transplantation in these cases. Intrathoracic goiters and deep sub-

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sternal ones are of serious import and are found about once in 50 operations. The parathyroids are worthy of much serious consideration by the operator. Only one or two of the normally existing four parathyroids may be active, and in operating they should be avoided by preserving the posterior capsule, especially if both the thyroids are operated on. On account of the difficulty of identifying the parathyroids it is advisable to preserve all small gland-like bodies beneath or connected with the posterior capsule. Treatment, however, of operative tetany with calcium lactate, and also beeves' parathyroid with thyroid extract, has proven very effectual.

In operating for goiter the best exposure is to be obtained through a transverse incision low in the neck, and if further exposure is needed the sternothyroid may be sectioned high in the exposed area. In simple goiters it is best to extirpate a greatly enlarged lobe. If the two lobes are symmetrically enlarged, division of the isthmus with double resection of the gland is indicated for the best cosmetic results. Midline and encapsulated adenomas should be enucleated with division of the isthmus; lateral encapsulated adenomas may be enucleated or the whole extirpated. Symptoms of hyperthyroidism indicate extirpation, but in severe cases, acute attacks or relapses, the condition should be considered medical until improvement occurs. During the first three or four months of the symptoms extirpation is safe, as the heart is not dilated. If it is dilated over an inch, primary ligation of the superior thyroid vessels is indicated, to be followed four months later by extirpation. After the first year only a much smaller percentage of cases calls for primary ligation. Excluding the malignancy cases the mortality of goiter operations is very low, but it increases with delay. The results of operating on simple goiters are very satisfactory; in hyperthyroidism about 70 per cent. are cured and the remainder are likely to be more or less benefited. With patients in good general condition a general anesthetic, *e.g.*, ether by the drop method, is to be preferred. Patients suffering from grave complications can be carried through extensive operations under local anesthesia with novocaine; a combined local and general anesthesia, as advocated by Crile, may sometimes be of advantage. C. H. Mayo (Journal of the American Medical Association, July 5, 1913).

HEXAMETHYLENAMINE, USES OF, IN INTESTINAL AND BILIARY AFFECTIONS.

That hexamethylenamine is useful for the prevention of excessive abdominal tympany after operations is maintained by the author. He gives 10 grains (0.6 Gm.) of the drug, dissolved in a glassful of water, every two hours between meals while the patient is awake, for two days previous to operation. The evening before or the morning of the operation the usual bowel cleansing with castor oil and enema is done. Immediately after operation the nurse dissolves 120 grains (8 Gm.) of hexamethylenamine in a quart of drinking-water, usually without ice, and as soon as the patient complains of thirst small quantities of this are given at a time, the amount being cautiously increased as the stomach becomes retentive. In this way the patient usually takes and retains the whole of the tasteless drug during the first twelve to twenty-four hours. By this time the patient can commonly take a glassful of water at a time, and 10 grains of the

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drug dissolved in a tumblerful of water are given every two hours, until between 60 and 120 grains are administered each day for seventy-two hours after operation. The drug is then discontinued and the usual postoperative bowel cleansing performed. If excessive vomiting is present or if for any purpose water is given by bowel instead of by mouth, the drug is dissolved in the hot water or saline thus administered. Among over 300 cases in which this measure was employed, including cases of appendectomy, hysterectomy, ovarectomy, suspension of the uterus, general pelvic operations, gall-bladder, kidney and bladder operations, operations for hernia, intestinal obstruction, pleuritis, etc., there were only 4 that suffered from tympanites as shown by distention of the epigastrium beyond the level of the ribs. One of these cases was intolerant of hexamethylenamine, while in another only small doses after the operation had been used. The rectal tube, stomach tube, turpentine and other measures were necessary in only the 4 cases referred to.

The use of hexamethylenamine in non-operative cases of infection of the bowel and bile-tract seems to be beneficial. Further, the author has never been forced to operate upon a case of bile-tract infection or obstruction from gall-stones during the acute attack, never failing to carry them over the stage of pain and fever by rest in bed, restriction of diet, avoidance of purges, administration of drugs quieting peristalsis, and the routine use of hexamethylenamine every two hours for periods of three days at a time. In acute appendicitis, while the author does not believe it ever wise to postpone operation where the proper facilities are at hand, he has seen many cases settle down into a quiet stage by starvation and the measures already mentioned.

In catarrhal jaundice the author has had most satisfactory results follow a treatment including the administration of 10 grains of hexamethylenamine every two hours during the waking period. In one case, at the end of three days the patient seemed entirely well, free from fever, and with the urine free from bile; another case, jaundiced two weeks, required five days of treatment before the urine was free from bile.

In a number of cases of visceroptosis accompanied by gastric and intestinal stasis, the following procedure was advised: A preliminary dose of 2 ounces (60 c.c.) of castor oil is to be administered, and twelve or fourteen hours later a soapsuds and olive-oil enema is given while the patient is in the knee-chest posture. Hexamethylenamine, 10 grains (0.6 Gm.) every two hours in a glassful of water, is then given until 60 to 80 grains (4 to 5.3 Gm.) are ingested a day. If bladder irritation or hematuria appear, the drug is at once discontinued. In the adsence of these signs it is given for three days of each week, a soapsuds and olive-oil enema being given as before at the end of each three days. All the cases thus treated improved, 2 of them in a striking manner.

Similar treatment was recommended in 4 cases of clinically typical pyloric ulcer and several cases of bile-tract infection during the stage of acute exacerbation of symptoms. Invariably the acute symptoms disappeared in from one to two weeks. Olive oil was given after each meal in addition to the hexamethylenamine. G. P. LaRoque (Therapeutic Gazette, July, 1913).

INDURATED ACNE, TREATMENT OF.

In the more severe cases of acne, with hard, infiltrated papules and large pustules—acne indurata and acne pustulosa,—the author, in addition to removing

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comedones and opening pustules, applies one of the following pastes:—

(I) ℞ Sulphuris præcipitati, ʒij (8 Gm.).
Acidi salicylici, ʒj (4 Gm.).
Petrolati,
Saponis viridis, āā ℥ss (16 Gm.).—M.

(II) ℞ Betanaphtholis,
Resorcinolis, āā ʒij (8 Gm.).
Saponis viridis,
Petrolati, āā ℥ss (16 Gm.).—M.

This is rubbed into the skin at night and left on for one to three hours, according to the degree of irritation produced. It is then wiped off with oil, the skin washed with water, and some bland ointment such as cold cream applied for the rest of the night. After several such applications the skin becomes dry, hard, and cracked, and then begins to peel. The paste is now discontinued. Should the skin feel very sore a little cold cream is used once or twice daily. After desquamation is complete one finds the new skin clean, smooth, and free from blackheads and pustules. As the lesions have a tendency to return, however, the treatment described may have to be repeated several times before a permanent result is obtained. C. J. Hailperin (Journal of the Medical Society of New Jersey, May, 1913).

INFANTILE DIARRHEA, TREATMENT OF.

A starvation diet, accompanied by purgation, in this affection is productive, the author asserts, of loss of weight and strength, and prolongs the course of the disease. Such a procedure can no longer be advanced as a rational method of treatment. The digestive powers in infantile intestinal conditions, even when associated with fever, are not so impaired as to prevent the digestion and assimilation of a milk diet.

In 4 cases of enterocolitis and 113 of gastroenteritis in infants and young children the author's treatment has consisted of the administration of a pure culture of the *B. lactis bulgaricus* in the form of tablets. One or 2 tablets of the organism were usually given every two or three hours; but in severe cases 2 or even 3 tablets were given every two or three hours before as well as after each feeding. Seventy-four babies, including 4 breast-fed, were continued on their respective milk diets. The remaining 43 patients were placed on a starvation diet of barley water for twenty-four to forty-eight hours, after which small quantities of boiled, skimmed or whole milk were usually added to the diet.

The effects of this form of treatment were, very distinctly, a gain in weight on the part of the infants, a rapid change in color of the stools to yellow; rapid subsidence of fever; absence of mucus and blood from the stools at the end of forty-eight hours. In severe cases, best results are obtained, it was found, by administering a large number of the tablets during the first two or three days of the treatment. As many as 42 tablets in twenty-four hours were given to very young babies without untoward effects.

This implantation method of treatment, according to the author, has progressed beyond the experimental stage, and the results of it can no longer be questioned or disputed. The simplicity of the treatment should appeal to every practitioner. A pure culture of the true *B. lactis bulgaricus* must be employed, however; otherwise, disappointment will follow. R. O. Clock (Journal of the American Medical Association, July 19, 1913).

MALARIA, TREATMENT OF.

The author advises that quinine be given in a fluid preparation, as it is then

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more readily absorbed than when in the form of pills and powders. Furthermore, the gastrointestinal tract is often congested and irritated in acute malaria, so that its powers of absorption may be greatly diminished. Sometimes cases resistant to quinine given by the mouth may be rapidly cured by hypodermic administration of the same drug. The author has found malaria often more difficult to cure when complicated by certain conditions, *e.g.*, anemia, acute gastrointestinal congestion, stasis, constipation, organic disease, tuberculosis, and especially syphilis.

The cause of relapses in malaria is not yet certainly known, but the majority favor the view that they are due to the resistant forms of the asexual parasite. It is best, therefore, to treat a malarial attack vigorously with quinine, as small and insufficient doses do not kill all the parasites, but favor the development of these resistant forms.

After eight years of experience comprising thousands of cases of malaria treated in the Canal zone, the following has been the routine method adopted:—

(1) Give a preliminary purge—3 to 5 grains (0.2 to 0.3 Gm.) of calomel. Follow in twelve hours by 2 ounces (60 c.c.) of a 50 per cent. solution of magnesium sulphate.

(2) Give 20 grains (1.25 Gm.) of quinine sulphate in a preparation made by dissolving 5 grains (0.3 Gm.) of this salt in 1 dram (4 c.c.) of distilled water with a drop of concentrated hydrochloric acid.

(3) Fifteen-grain (1 Gm.) doses of quinine in the same preparation are to be given three times daily for a week, or for five or six days after the temperature is normal. The dose is then to be reduced to 30 grains (2 Gm.) daily, and this continued for ten more days. In Panama this treatment has proved much more satisfactory in preventing relapses than the former treatment of 10 grains (0.6 Gm.) three times a day. If the infection is very severe the dose is increased to 15 grains (1 Gm.) four times a day.

(4) When vomiting is present, quinine is given in doses of 22½ grains (1.5 Gm.) hypodermically. A French preparation of the bihydrochloride, obtained in ampoules, is used. Each dose is given well diluted in 5 drams (20 c.c.) of normal salt solution, and injected deeply into the subcutaneous tissues with a large syringe. Abscesses very rarely occur after this procedure.

(5) The above treatment does not always prevent relapses, especially where there have been previous relapses due to insufficient treatment at the outset. In such obstinate cases the author injects intravenously by means of a salvarsan apparatus doses of 15 to 30 grains (1 to 2 Gm.) of quinine in 300 to 500 c.c. (10 to 16 ounces) of normal saline, on two succeeding days, and then continues with 45 grains (3 Gm.) a day by the mouth as already noted.

(6) Tonics, with arsenic, iron, and strychnine are valuable adjuvants in treating the anemia resulting from malaria. Small doses of quinine added to these, however, have no curative value, tending rather to increase the resistance of any remaining parasites. W. M. James (Southern Medical Journal, May, 1913).

MENINGITIS, ANTISTREPTOCOCCIC SERUM USED IN.

The case of a child 4 years old, presenting characteristic signs of meningitis—fever, vomiting, nuchal rigidity, Kernig's sign, skin hyperesthesia, clonic convulsions, herpes labialis, etc.—is re-

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ported by the author, in which the administration of antistreptococcic serum proved to be the measure indicated. Lumbar puncture at first proved negative, showing no cellular abnormality. Then the patient's condition grew worse, and pupillary rigidity was noted. With the idea that the case was one of epidemic cerebrospinal meningitis, an jection of 15 c.c. of antimeningococcic serum was made, without, however, any favorable results. Another lumbar puncture having been practised, streptococci were found in the evacuated fluid, and the patient was then given 4 injections of antistreptococcic serum. At once the condition of the pulse improved and the convulsions ceased. The patient died two months after the beginning of the trouble, from heart-failure, but this unfavorable termination was not due to the meningitis, the antistreptococcic serum having had a favorable action. In concluding, the author lays stress on the necessity of performing lumbar puncture in all cases of meningitis. Juarros (Revista de medicina y cirugia practicas; Bulletin médical, July 19, 1913).

NEURALGIA, TREATMENT OF.

In sciatica and in brachial or trigeminal neuralgia or neuritis the authors have found the application of the X-rays to the corresponding nerve-roots to give good results. Not only was pain markedly influenced, but the return of reflexes such as the tricipital or Achilles gave evidence of an actual reparative effect. Whether the cause of the neuralgia be a true radiculitis or a lesion compressing the nerve-roots, X-ray treatment relieves the latter from the harmful pressure. If, however, the neuralgia in a given case is due to involvement of the nerve-trunk peripheral to the radicular region, the rays will not bring relief.

In the application of the rays by the authors the apparatus was so arranged as to cause oblique penetration of the rays to the spinal roots, between or through the vertebral laminæ, the opposite side, beyond the spinous processes, being protected by sheet lead. In sciatica, the irradiation should be directed to the last two lumbar and first three sacral vertebræ; the sacroiliac joint may also be treated. If the cause of the sciatica is suspected to be a true radiculitis, the entire region should be treated, up to the spinous process of the eleventh dorsal vertebra. For brachial neuralgia, between the third cervical and the first dorsal spinous processes is the region over which the X-rays should be directed, while for trigeminal neuralgia the latter should attain the area above the zygoma, near the ascending process of the malar bone. Zimmern, Cottenot, and Dariaux (Presse médicale, June 25, 1913).

OPHTHALMOLOGY, HYDROGEN PEROXIDE IN.

The use of hydrogen peroxide in various eye conditions is warmly recommended by the author. In purulent conjunctivitis, *e.g.*, gonorrheal and membranous, it gives very satisfactory results. In the former case it should be used in the form of a warm douche (40° C. or 104° F.). The peroxide is not decomposed at this temperature, while the gonococci are destroyed. Whereas silver nitrate is contraindicated in corneal ulcerations, hydrogen peroxide is of great use. It disinfects the ulcer and, owing to its peculiar action on the toxins generated, iritis and hypopyon are less frequently noticed in cases of pneumococcal infection.

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In blepharitis hydrogen peroxide can be recommended for removing the crusts. In the pannus associated with trachoma or chronic corneal conditions, after the operation of syndectomy has been performed, a probe tipped with cotton-wool and saturated with the drug should be rubbed into the gap from which the conjunctiva has been removed. This measure, followed by the instillation of dionin and the injection, subconjunctivally, of salt solution, has brought about removal of many dense nebulæ.

Lachrymal obstruction and purulent infection of the lachrymal sac are greatly benefited by hydrogen peroxide; indeed, an obstruction that resists everything else will give way before this agent. Should there be much stretching of the sac wall during the syringing, it will be necessary to warn the patient that there may be some puffiness of his eyelids and the inner corner of his eye for from twelve to twenty-four hours afterward. This disadvantage can be avoided by using as little force as possible in washing out the sac; when much of the fluid has escaped into the tissues, the edema is extensive and may last several days. This does not apply to its use immediately before the operation of excision of the sac, when it is desirable to remove every trace of pus from its interior. P. A. Harry (Prescriber, June, 1913).

PANHYSTERECTOMY, ACROMEGALY FOLLOWING.

The author reports the case of a woman operated for uterine fibromyoma and tumor of the annexa at the age of 39. Some months after the panhysterectomy there began to be noticed a gradual increase in size of the hands and feet, broadening of the face, marked prominence of the chin, and a pronounced increase in body weight. There were no serious brain symptoms or visual disturbances. The author considers the development of the acromegaly probably to have been dependent upon the abolition of the reproductive functions. Goldstein (Münchener medizinische Wochenschrift, April 8, 1913).

PELLAGRA, HYDROTHERAPY IN.

In hydrotherapy, according to the author, we have an auxiliary in treatment the value of which has not been sufficiently appreciated in pellagra. For the frequent and sometimes constant nausea, for example, the drinking of from 2 to 6 glasses of tepid water once or twice daily, so that by its emesis the stomach may be washed, is beneficial. Where it can be expertly performed, lavage once daily is better. A cold-water bag placed over the epigastrium a half-hour before meals and kept on fifteen to thirty minutes, plus the drinking of a half-glass of iced water, exerts both a stomachic and sedative effect.

The frequent diarrhea may be greatly alleviated by hot colon irrigations, followed by cold sitz baths of five to ten minutes' duration. This double procedure may be repeated two to four times daily when the patient is not too weak. Another valuable procedure consists in encircling the abdomen by a thick towel of liberal proportions, saturated with cold water. Copious water drinking is generally advisable, for eliminatory purposes. The diarrhea, being of central origin, and mainly compensatory in character, is rarely increased by an abundance of water in the body.

To increase elimination by the skin there can be used the so-called "long bath" or various hot packs. The electric-light chamber, however, is contraindicated in pellagra. In the occasional

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troublesome itching of the skin, a cool or cold saline bath is often grateful. This may be made by the addition of sodium chloride, 7 pounds; magnesium chloride, 1 pound, and magnesium sulphate, ½ pound, to 30 gallons of water.

In many of the neuroses relief is obtained through hydrotherapy. The burning hands and feet may be greatly soothed by either ice-cold compresses applied at frequent intervals or baths in hot mustard water. In addition there may be employed hot leg-and-arm packs and revulsive compresses to the spine. In the use of the last-named the hot compresses should stay on from three to five minutes, while thirty seconds are sufficient for the cold. From 3 such treatments daily, of thirty minutes' duration, the relief is often remarkable, even where analgesics have failed to give enduring results.

For mental disquietude with transient exhilaration associated with insomnia, in pellagrins, the neutral full bath at 94° to 96°, lasting from one to two hours, morning and evening, exerts a soothing effect. This may be augmented by warm compresses to the back of the neck, kept on about fifteen minutes, and applied three times daily. Should the patient seem somewhat autotoxic, a free perspiration can well be induced at the end of the neutral baths by the use of hot packs, followed by suitable and brief cold applications.

A daily hot enema is often comforting even if not specially indicated by any abnormal bowel condition.

For mental depression and melancholia the cold, percussion, spinal douche bath exerts a decidedly good effect. If the patient is robust physically this douche bath may begin as low as 45°, but 65° to 70° is usually better. Should this not be agreeable, spinal sponging with alternately hot and cold water, affords a passable substitute.

For the anemia and debility so often following in the wake of acute pellagra, cold measures, discreetly applied, yield not only a tonic effect, but also an appreciable effect on the red blood-cell count. G. M. Niles (American Journal of the Medical Sciences, August, 1913).

PINEAL TUMOR AND EARLY PUBERTY.

The case of a child which at the age of 4 months developed hydrocephalus with spastic paresis and later showed signs of pineal tumor is reported by the author. The hydrocephalus soon came to a standstill, but the child remained backward intellectually, whereas physically, on the contrary, there was marked precocity. At 18 months the pubis became hairy, the reproductive organs developed, and the voice changed. X-ray examination favored the idea that pineal tumor existed in this case as in previously reported cases confirmed at autopsy. Van der Heide.

Another observer points out that any growth in the pineal region may cause the same set of symptoms, even when it is not constituted of pineal tissue. An absolute requisite, however, is that the tumor shall exert pressure upon the aqueduct of Sylvius, thus causing hydrocephalus of the ventricle and dilatation of the diverticulum springing from this ventricle to enter the stalk of the hypophysis. This diverticulum becomes dilated in the form of a cystic pocket, like a grape-seed dependent from the base of the brain. The cavity thus formed tends to fill up the pituitary fossa and compress the hypophysis. In a case which the speaker examined at autopsy, the pituitary was reduced to a thin stratum less than a millimeter in thickness. Destruction of the pituitary would, ac-

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cording to this, seem to play a more important rôle in the pathogenesis of the "pineal syndrome" than exaggerated function of the pineal body. Apert (Société de Pédiatrie, Paris; Bulletin médical, August 6, 1913).

PROCTOCLYSIS, APPARATUS FOR.

By a long series of experiments, not only with the ordinary simple hospital apparatus for proctoclysis, but with all now in use supplied by manufacturers, the author has convinced himself that uniformly, instead of reaching the patient warm, the saline solution becomes cooled before it enters the rectum. The procedure he describes having for its purpose to overcome this objection consists in placing near the patient's rectum a 2-quart heating bag, through which the salt solution pipe passes as in a hot-water bath. In this method the temperature of the saline as it enters the rectum at first, when the heating bag has just been filled, is about 108° F., from which it drops gradually in an hour to 98°. The heating bag is then refilled at 140° and the rectal temperature returns to 108°. The results have been tested for six-hour periods in 4 separate trials, and the efficiency of the procedure definitely established. A new device added to the apparatus shows the exact amount absorbed in any minute, when the patient stops absorbing, etc. The nurse or surgeon can at any time, by turning one stop-cock, tell both how much the patient is absorbing and at what rate the flow is taking place. G. H. Tuttle (International Journal of Surgery, June, 1913).

SCIATICA, DIET IN THE TREATMENT OF.

That the diet has never received sufficient attention in the management of cases of sciatica is asserted by the author. Any patient suffering acute pain and upon whose nervous system great and constant demands are being made requires a large amount of food, and food of a kind which is both stimulating and fat producing. A part of the treatment of every patient with sciatica should, therefore, consist in ordering a diet in which fats predominate. He should have milk, cream, eggs, butter, marrow, bacon, and oils, mayonnaise dressing, and cheese. He should have frequent feeding between meals, in addition to three regular and large meals. Meats, especially the red meats, however, must be eaten sparingly. Alcohol should be interdicted. Large quantities of water aid in two ways: By tending to improve general nutrition and by flushing out the kidneys. A good plan is to give these patients, half an hour before each meal, a large cup of hot water to which one of the glycerophosphates has been added. E. L. Hunt (Medical Record, June 28, 1913).

SKIN AFFECTIONS, MEDICATED BATHS IN TREATMENT OF.

In "non-irritable" skin affections such as psoriasis, obstinate seborrheic eczema, prurigo, ichthyosis, trichophytic infections, pityriasis versicolor, erythrasma, and even some cases of dermatitis herpetiformis, medicated baths constitute a convenient and effective mode of treatment for patients who cannot leave their daily occupations, as they are but very slightly odorous and at the same time allow of active and accurately regulated medication. In non-inflammatory psoriasis such baths may be used from the start; in other conditions, however, it is best first to make sure that the skin is not irritable by applying an ointment containing oil of cade over a small skin area.

The most widely used medicated bath

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is one with oil of cade; to this, if well borne, other remedies may subsequently be added. The amount of the oil employed at each bath should be at first only 50 Gm. (1⅔ ounces); it may then be increased to 100 Gm. (3⅓ ounces) or even in some cases to 125 Gm. (4 ounces). Balzer advises one of the following methods of emulsifying oil of cade:—

(I) ℞ Olei cadini, 50-100 Gm. (1⅔-3⅓ oz.).
Saponis, 25-50 Gm. (⅔-1⅔ ounces).
Aquæ, q. s. ad 300 Gm. 10 ounces).
M.

(II) ℞ Olei cadini, 50-100 Gm. (1⅔-3⅓ oz.).
Vitellum ovi, no. j or ij.
Fluidextracti quillajæ, 10-20 Gm. 2½-5 drams).
Aquæ, q. s. ad 500 Gm. (1 pint).—M.

These mixtures are to be first mixed by vigorous shaking with a little hot water, then slowly poured into the bath water, which should be at about body temperature. Such a bath, half to one hour in duration, should be taken daily. The color of the urine should be noted each day. Acne occasionally results; this is to be treated by applying a 1:100 alcoholic solution of methylene blue. An average of 20 to 30 baths is required to cure a common case of psoriasis; if skin irritation occurs, the bath should be omitted once every three days.

Only where the simple oil of cade baths fail should chrysarobin or pyrogallol be added. The former may be combined with the second formula above given to the amount of 1 to 5 Gm. (15 to 75 grains); the pyrogallol, 1 to 10 Gm. (15 to 150 grains). Chrysarobin should be avoided, however, in the presence of renal or hepatic disease. When used, it should not be applied to face or scalp, and the anal and genital semimucous surfaces should be protected with petrolatum. The baths should be of an hour's duration, and taken in series of 3 on successive days, with a one-day interval between. The same applies to the baths containing pyrogallol. These cause the urine to blacken readily—in the prophylaxis of which Unna and Leistikow have advised the daily administration of 2 drops of hydrochloric acid diluted with water—but, different from those containing chrysarobin, can be employed over the face, provided the eyelids and lips be protected with petrolatum.

Where oil of cade is highly repugnant to the patient or there is unusual susceptibility to acne, good, though usually less gratifying, results may be obtained by baths medicated as follows:—

℞ Chrysarobini, 1-5 Gm. (gr. xv-lxxv) vel
Pyrogallolis, 1-8 Gm. (gr. xv-3ij).
Olei olivæ vel amygdalæ dulcis, 100 Gm. (f℥iiiss).
Vitelli ovi, no. ij.
Fluidextracti quillajæ, 20 Gm. (f℥v).
M.

If success with the baths is incomplete, or very active treatment is the object from the beginning, the following ointments may be applied twice daily over small areas, in the intervals between the baths:—

(I) ℞ Acidi salicylici, 10 Gm. (℥iiss).
Chrysarobini,
Picis liquidæ, āā 20 Gm. (℥v).
Saponis viridis,
Petrolati, āā 25 Gm. (℥vj).—M.

(II) ℞ Acaciæ, 2.5 Gm. (gr. xl).
Tragacanthi, 1.5 Gm. (gr. xxiij).
Glycerini, q. s. ad 35 Gm. (f℥ix).
M. et adde
Talci,
Zinci oxidi, āā 30 Gm. (℥j).
Chrysarobini, 1 Gm. (gr. xv).

These ointments may, of course, be rendered less strong as occasion may require. The former ointment will have to be removed by washing with an alkaline

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soap and water before each medicated bath is taken. With the second formula, however, this is unnecessary. H. Gougerot (Paris médical, February 8, 1913).

TUBERCULOSIS, PULMONARY INTRATHORACIC INJECTIONS IN.

The author gives details concerning 22 cases in which there was practised a special method consisting in the injection of an iodized fluid through the intercostal spaces, with the object of bringing it into direct contact with the diseased focus in the lung, whether a cavity or area of tuberculous infiltration. The cases were observed to derive very distinct benefit from the procedure, although they were in more or less advanced stages, in which other methods of treatment afforded but little encouragement. The injections were well tolerated, and there did not seem to be any danger of hemorrhage, even when the case was one with hemoptysis. Two cases were in children, aged 4 and 10 years respectively. The solution to which the author has reference consists of iodoform, 1 Gm. (15 grains); camphor, 2 Gm. (30 grains); guaiacol, 5 Gm. (75 grains); essence of mint, 30 drops, and olive oil, 20 Gm. (5 drams). The needle, preferably of platino-iridium, should be of fine caliber and from 3 to 5 cm. long. In adults from 20 to 60 injections were given, according to the extent of the disease, while in the 2 cases in children 10 sufficed. One cubic centimeter (16 minims) was the amount usually injected, but as much as 4 to 6 c.c. (1 to 1½ drams) was required for cavities. Avoiding the cardiac area and large vessels, the object is slowly to inject the solution directly into the affected part of the lung. The most favorable area is that comprised between the second and sixth ribs on both sides. The best point for reaching the apex was found to be the second intercostal space in the dorso-scapular region.

Of the tuberculous nature of the reported cases there could be no doubt, and in all of them there ensued after the injections gradual cessation of fever and cough, disappearance of tubercle bacilli from the sputum and of the physical signs present, and restoration to health. The treatment neither interfered with open-air exercise nor prevented the patients from following their ordinary occupations. V. D'Amico (Rivista medica; Lancet, March 29, 1913).

TUBERCULOUS SINUSES, TREATMENT OF.

After employing a large variety of methods in the treatment of these cases the author has found that the best results are obtained by local tuberculin treatment. It is very stimulating to the sluggish granulations and converts the creamy pus into serosanguineous pus. After two or three injections the sinuses appear healthier and the discharge is markedly decreased.

The technique consists merely in the injection of about 120 minims (7.5 c.c.) of 1:500 old tuberculin solution into the depths of the sinus by means of a syringe or a small soft-rubber catheter, which is withdrawn as the injection is made. After 3 or 4 injections the strength of the tuberculin is increased to 1:250 or even 1:50, this being governed by the reaction, both local and systemic. The injections are given bi-weekly. There is some systemic as well as local reaction after the first injection. The patient's temperature may reach 101° or 101.5° F., with some lassitude, but this is less marked after the first 2

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or 3 injections, and usually disappears entirely after subsequent treatments. Great care must be taken to use dilute tuberculin solution, as it is desirable to avoid a rise in temperature. The sooner one gets the sinus closed or thoroughly plugged, aside from the treatment of the granulations with the tuberculin or some other substance to stimulate the walls of the abscess or sinus, the better it is for the patient.

Recognized surgical and orthopedic methods of treatment should, of course, be simultaneously applied, as well as the hygienic measures customarily enforced in tuberculous disease. W. S. Niblett (New York Medical Journal, April 26, 1913).

VOMITING, RECURRENT, IN CHILDREN.

The condition discussed by the author is defined by him as a toxic neurosis characterized by uncontrollable but self-limited attacks of vomiting, attended with great prostration and marked wasting, lasting for a few hours to several days, recurring at intervals of weeks, months, or nearly a year, and tending to cease toward puberty or to be replaced in adult life by migraine.

In the treatment, the author notes that the administration of an alkali, based upon the assumption that recurrent vomiting is an acid autointoxication, has been very successful in some hands and a failure in others. Ten to 30 grains (0.6 to 2 Gm.) of sodium bicarbonate have been given three times a day during the intervals, and every hour or two at the onset of an attack until 100 or 120 grains (6.6 or 8 Gm.) have been taken in twenty-four hours. This treatment seems to be most likely to be successful when started in the prodromal period. If the diet is at once curtailed or food temporarily omitted, the intestinal tract cleared, and the bicarbonate given freely, an approaching attack can be prevented, it is said, even if the bicarbonate has been discontinued during the preceding interval. This was apparently true in one of the author's cases.

Successful abortive treatment suggests prophylaxis along the same lines, to be given at regular intervals somewhat shorter than the shortest interval between attacks noted in the history of the individual case.

If treatment is begun too late for the stomach to retain the sodium bicarbonate, a dram or two (4 to 8 Gm.) of the remedy, dissolved in 8 ounces (250 c.c.) of normal saline solution, may be given by rectum. If vomiting continues, the thirsty tissues may be supplied with normal saline solution by high enemata or subcutaneous injections. If incomplete catabolism of fat with acidosis were a fundamental etiological factor, an enema of dextrose might be indicated. Occasionally a hypodermic dose of morphine may be of service.

In the intervals much can be done to improve the condition of patients by eliminating from their lives factors known in one way or another to be etiological in recurrent vomiting, *e.g.*, constipation, overeating, questionable diet, occasions for overexcitement, too much indoor life, eye-strain, adenoids, etc., as well as by employing all available means to build up resisting power. A. C. Mercer (New York State Journal of Medicine, June, 1913).

WOUNDS, GRAPE-SUGAR IN THE TREATMENT OF.

According to the author's observations glucose appears to possess distinct antiseptic and bactericidal properties. It was employed by him in about 100 cases,

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with convincing results. Among them were cases of acute and chronic osteomyelitis, more or less extensive putrid foci, superficial or deep infected wounds, varicose ulcers, etc. The healing of drainage wounds after operations for appendicitis, cholecystitis, goiter, etc., was also found to be notably promoted, even where other treatment had been without effect for weeks or months.

In addition to its disinfectant action, glucose has the power to dissolve fibrin and promote cleanliness of wounds—in part also by osmosis, causing an outpouring of serum. Two or three applications of a glucose dressing over varicose ulcers produce a complete detergent effect. The dressing should be renewed daily, and is prevented from adhering to the open surface by the flow of wound secretions the glucose produces. All odor disappears from the wounds. Healing takes place easily and without the proliferation of fleshy granulations, silver nitrate applications being therefore unnecessary. In none of the patients was any harmful effect produced by the glucose, even where it was copiously applied to large wound surfaces. No glycosuria could be detected.

The glucose used was the commercial variety, without any attempt at sterilization before use. Cultures from the sugar proved uniformly negative as far as pathogenic germs were concerned; organisms developed only in 11 per cent. of the tests made, and these were harmless saprophytes. Staphylococcus and streptococcus cultures were inhibited by saturation with the sugar, and developed organisms, as in streptococcic pus, killed. The same conditions obtain when glucose in substance is introduced into an infected wound. Tuberculous ulcers alone were found to be practically uninfluenced by the sugar. Magnus (Münchener medizinische Wochenschrift, February 26, 1913).

WOUNDS, TINCTURE OF IODINE IN TREATMENT OF.

In traumatic surgery tincture of iodine appears to the author to be the best of all antiseptics. In treating with it nearly 1000 patients with incised, lacerated, and contused wounds, dog-bites, compound fractures, traumatic amputations, etc., he has obtained excellent results. The more simple the technique the better. If the area about the wound needs shaving it should be shaved dry. Any loose tags of tissue or foreign body should be removed with sterile instruments, and not washed out. The tincture should be first painted about the wound and allowed to dry for a short time, opportunity being thus given for penetration. Then with another bit of sterile cotton on a toothpick the wound itself should be painted thoroughly. Dannreuther's method of injecting the deeper recesses of a wound with a medicine dropper is a good one, but should not be depended on entirely in cases of puncture wound where there is a liability of tetanus infection. A sterile compress should then be held firmly over the wound, if it is small, until hemorrhage is stopped, and a sufficient number of sutures applied to approximate the edges of the wound when indicated. In large, lacerated wounds the iodine may be poured into the wound after painting a free area about it. Drainage should, of course, be established when indicated, especially in the badly contused, lacerated wounds, where there is apt to be much oozing and tissue resistance is much below par. T. G. Orr (Journal of the Missouri State Medical Association, May, 1913).

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Clinical Summary

Practical hints from articles and abstracts that have appeared in the Monthly Cyclopedia and Medical Bulletin during the current year.

Acne. TREATMENT. 1. Following lotion advised: Zinci sulphatis, potassæ sulphuratæ, sulphuris præcipitati, of each 3j; aquæ, ℥iv; to be applied at night. 2. To keep open orifices of follicles, resorcinol in 10 to 15 per cent. paste, recommended. 3. If skin thick, sluggish and oily: Preliminary washing with tincture of green soap. 4. Warm water may be used after incising pustules, to favor bleeding, but for washing cold water is preferable. 5. X-rays of service (*a*) to increase local blood-supply and improve resistance; (*b*) to cause atrophy of sebaceous glands. 6. High-frequency current useful to reduce induration of nodular acne. 7. Massage or local manipulation, to facilitate drainage of ducts. 8. Dermal curet, when pustules cured and superficial epithelium somewhat macerated by resorcin. *Chipman.* Page 283

Actinomycosis. TREATMENT. X-ray treatment recommended in cases resisting customary iodide medication and recurring after operative intervention. *Levy.* 472

Adenitis, Tuberculous. TREATMENT. 1. Produce Bier hyperemia by applying elastic band about neck for a few hours before opening abscess. 2. Make very small straight incision into gland, evacuate contents with dull spoon, using no force, and, without washing or wiping out cavity, introduce a 2 to 4 per cent. solution of formaldehyde in glycerin, and seal incision. Primary healing results in 50 per cent. of cases; others are treated by further injections. 3. In cases of extensive involvement, prescribe enzymes of yeast internally. 4. In the few cases that do not respond satisfactorily, resort to radical operation. *Brown.* 303

Albuminuria. TREATMENT. Prophylactic doses of Roux's antidiphtheritic serum in 128 cases of scarlet fever found to lower greatly frequency of albuminuria in these cases. Anaphylactic effects extremely rare with this serum. In all cases of albuminuria originating from throat inflammation, as well as in albuminuria in general where other measures have proven ineffective, the serum should be given hypodermically in doses of 10 c.c. (2½ drams) every three or four days. *Galliot.* 36

Anal Fissure. TREATMENT. Conservative measures advocated in painful fissure. In examining for it have patient bear down, or blow in some orthoform. In treatment: 1. Apply thigenol on cotton on end of probe, which is then withdrawn, leaving cotton in position. 2. Patient to drink tumblerful of hot water an hour before breakfast, and another, either hot or cold, in evening. 3. To insure softness of motions: Tincture of cochineal and peppermint oil, of each, ♏x (0.6 c.c.); syrup of glycerin, 3j (4 c.c.); soft paraffin, ℥j (31 Gm.). If this objectionable, add 20 grains (1.3 Gm.) of powdered cocoa, or 10 to 20 grains of powdered agar. Dose of the mixture, 1 teaspoonful four times daily. 4. Where constipation previously present: Some aperient, such as confection of senna, 3ss-j (2-4 c.c.), to be given in addition. 5. After bowels act: Patient to wash parts and apply some bland ointment, *e.g.*, one of eucalyptus. 6. Where violent sphincteric spasm and pain, dilate under gas, and, if sentinel pile present, remove with forceps. *Baldwin.* 109

Anemia. TREATMENT. Administration of olive oil and glycerin, equal parts, in gradually increasing doses two hours after each meal considered a valuable measure. *Bram.* 47

Appendicitis, Acute. TREATMENT. After operation in children: 1. Give warm saline solution by rectum, 8 to 10 ounces every two or four hours; administer slowly with catheter and funnel. 2. Feed with a decoction of crushed raisins, alternated with albumin water. 3. Open bowels as soon as possible. If no normal movement within twenty-four hours, give glycerin enema; use syrup of senna as routine aperient. *Stiven.* 37

Appendicitis, Chronic. DIAGNOSIS. In cases of chronic appendicitis with digestive symptoms, induction of referred pain or distress in the epigastrium, left hypochondrium, umbilical, left inguinal, or precordial region by a continuous firm pressure over the appendix (McBurney's point) is a valuable test in deciding when and when not to recommend operation. *Aaron.* 283

Ascertain lower, outer and inner borders of cecum, usually distended with gas, by percussion; estimate, from this, position of appendix, and find out whether there is tenderness at that point. Where mapping out cecum by percussion not possible, place thumb at junction of right edge of rectus muscle and umbilicospinal line and, with it pointing toward ensiform, sink it in about halfway to back of abdominal cavity; next swing it to right of patient at right angle to line of previous pressure, thus pinching appendix against unyielding structures and eliciting tenderness if it be diseased. If this test negative, repeat ½ inch lower and test again, until brim of pelvis almost reached. Control by pressure on left side. *Bassler.* 545

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Arthritis, Chronic. TREATMENT. Certain joint cases, rebellious to all other treatment, can be arrested by proper diet combined with colonic lavage. Breakfast: Cereal, small amount; toast with butter; imitation cereal coffee. Between breakfast and lunch: Buttermilk, 2 glasses; water, 1 glass. Lunch: Clear soup (or lettuce or spinach); 1 roast potato; 2 slices toast; imitation coffee. Between lunch and dnner: Buttermilk, 1 glass; water, 1 glass. Dinner: Clear soup (or twice a week small amount roast chicken, or 1 egg); toast or lettuce; imitation coffee; apple sauce. Between dinner and bedtime: Buttermilk and water. Daily simple enema followed by high colonic lavage with about 1½ quarts normal saline solution, until washings return fairly clear. Adapt diet to individual caloric needs and with constant regard to weight. *Pemberton.* Page 45

Arthritis, Gonorrheal. TREATMENT. A. Acute. 1. Sodium salicylate, 1 to 4 drams (4 to 6 Gm.) or acetyl salicylic acid, 20 to 30 or 40 grains (1.3 to 2.6 Gm.), freely diluted, during febrile stage. 2. Where intolerable pain and insomnia or threatening rupture of synovial membrane or subluxation, puncture, repeated if necessary, and active counterirritation. 3. In suppurative and grave forms, arthrotomy, either simple or followed by iodine or zinc chloride. 4. Passive movements and massage, when acute symptoms subsided. Other available measures: 5. Antigonococcic vaccines. 6. Antimeningococcic serum. 7. Autoserotherapy. 8. X-rays or radium in obstinate cases. 9. Bier's hyperemia. 10. Hot-air treatment especially; air in hot-air-box at 175° to 210° F., for one-half to one hour at a time. B. Chronic. Additional special measures: 1. Disinfection of genitourinary tract. 2. Thyroid substance, 2-grain (0.12 Gm.) cachets one to three times daily. 3. Fibrolysin injections, 30 minims (2 c.c.) daily for a fortnight, where joint deformity present. *Dardel.* 236

Arthritis, Rheumatoid. TREATMENT. Atophan found most efficient drug in relieving pain in a case of rheumatoid arthritis. *Kahlo.* 350

Asthma, Bronchial. TREATMENT. 1. When patient first seen during an attack, give 10 grains (0.6 Gm.) of blue mass or an equivalent amount of calomel with soda, followed by salts next morning. 2. Morphine and atropine injection, only if patient suffering intensely. 3. Sodium iodate, gr. iv-v (0.25-0.3 Gm.) every four to six hours, in capsules, given with food (contraindicated in the tuberculous, especially if hemoptysis). 4. Repeat mercurial purge if attack not markedly better in twenty-four hours. 5. Diet. During attacks: Broths every two to four hours. In intervals between attacks: Enough plain, coarse food to satisfy hunger and no more. Soups, clear of fat; fresh fish; raw oysters or clams; tender and lean meats; all vegetables except onions, cabbage, cucumbers, corn on cob; potatoes, peas, and beans only sparingly; only well-baked or toasted bread; rice, cereals, and eggs in moderation; no raw fruits; pastry, sweets, and any articles found by experience to disagree to be avoided. Careful scrutiny of patient's selection of foods required. Heaviest meal to be taken at noon; light supper. *Oettinger.* 37

Theobromine sodium salicylate (diuretin) found to do good in many cases. Often it is sufficient to give 15 to 30 grains (1 to 2 Gm.) before time of expected paroxysm. The product can be taken for weeks without harm. *Meyer and Cahn.* 179

Inhalation of 1: 1000 epinephrin solution in a special very fine spray from small atomizer advised for arrest of a paroxysm by patient at any time. In established severe attacks, following combination recommended: Epinephrin solution, 9 c.c.; atropine sulphate, 0.01 Gm.; cocaine hydrochloride, 0.025 Gm.; distilled water, 1 c.c. *Staübli.* 284

Combined injections of 0.0008 Gm. (1/80 grain) of epinephrin and 0.04 Gm. (⅔ grain) of pituitary extract in 1 c.c. (16 minims) of water used with marked success in arresting paroxysms in 300 cases. More effectual than epinephrin alone. Second injection required in only 10 instances. *Weiss.* 296

Bronchopneumonia. TREATMENT. Creosote carbonate recommended for use in bronchopneumonia and obstinate chronic bronchitis in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first three years; in fifth and sixth years, 20 drops (2 Gm.). *Hunäns.* 162

Burns. TREATMENT. Where patient shocked and cannot stand anesthesia, use dressings of saturated picric acid solution for two days. Then clean up burns under chloroform general anesthesia with 70 per cent. alcohol, rubbing vigorously, and dress with same, on gauze, covered by dry gauze, cotton, and bandage. Dress daily in same way under anesthesia for eight days; then apply boroglyceride gauze dressings, when healing will rapidly follow. In burns involving whole skin, cut off sloughs with scalpel, without waiting for separation. To avoid excessive alcohol absorption, one may interpose boroglyceride gauze between burn and alcohol gauze. *Milligan.* 410

Carcinoma. TREATMENT. Silicic acid internally, 1/6 to ⅓ grain (0.01 to 0.02 Gm.) daily, advised to prevent recurrence after cancer operations. In cancer of digestive organs, however, not more than a few milligrams should be given daily. *Benedikt.* 242

Carcinoma, Esophageal. TREATMENT. Hydrogen dioxide, 1 dessertspoonful of 1 to 3 per cent. solution every hour, found to be valuable palliative measure where stenosis apparently complete. Within twenty-four hours stenosis is overcome, and later purées and even solid food can be swallowed. Sub-

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jective symptoms disappear and patients gain in weight. Measure of little use, however, in scirrhous form of cancer. *Fradiss.* Page 109

Cardiovascular Disease. TREATMENT. Ideal diet in presence of impaired circulation consists essentially of bread and butter, with some milk to supply fluid, and enough cheese to make up protein requirements; fruits and vegetables to be added in moderate amount. *Bishop.* 108

Reference made to cases with high blood-pressure, hypertrophied heart, without notable thickening of superficial arteries or renal changes of importance. Symptoms usually respiratory or gastric, occasionally vertigo, tinnitus, or peripheral numbness and tingling. Measures advised: 1. Rest, especially mental. 2. Reduction in quantity of food taken, especially of purin-containing articles; small evening meal. 3. Restriction of alcohol, and especially tobacco. 4. Bowels to be kept open with phenolphthalein and rhubarb, or compound licorice powder, and calomel or blue mass occasionally. 5. Nitrites, only to relieve symptoms; where nitroglycerin fails, sodium nitrite, ⅛ to 2 or 3 grains (0.007 to 0.2 Gm.), or erythrol tetranitrate, ½ grain (0.03 Gm.) useful. 6. Sodium iodide, two hours after meals, in water or milk. 7. Digitalis in small doses where dyspnea or even vertigo. 8. Venesection at times very useful and effective. *Riesman.* 288

Case of "bad heart attack," with rapid, irregular, feeble pulse, cyanosis, and dyspnea, but no edema, in a woman of 77, in which life was apparently saved, after failure of other remedies, by administration of cane-sugar in milk and syrup. Four ounces (120 Gm.) given during night, same amount in ensuing twelve hours, and smaller quantities for several weeks after. *Denyer.* 548

Chorea. TREATMENT. Twenty-five cases, in children of 8 to 19 years, in which abnormal movements rapidly disappeared after 3 or 4 intravenous injections of 0.2 to 0.35 Gm. of salvarsan, given weekly. Recovery regularly after three or four weeks. General condition also always greatly ameliorated. *Marie and Chatelin.* 38

Constipation. TREATMENT. Stubborn constipation in infants is relieved by giving 1 dram (4 c.c.) of olive oil once or twice daily. Constipation in neurasthenics is also benefited. *Bram.* 47

Cyanide Poisoning. TREATMENT. 1. Give 3 ounces (90 c.c.) of 1:10,000 epinephrin solution by mouth. 2. Give Martin's antidote, made by mixing 8¾ drams (33 c.c.) of 23 per cent. ferrous sulphate solution with 1 ounce (30 c.c.) of 5 per cent. potassium hydrate solution and ½ dram (2 Gm.) of magnesia. 3. Wash out stomach. 4. Give 1⅔ ounces (50 c.c.) of 1: 10,000 epinephrin solution. *Jona.* 553

Diabetes Mellitus. TREATMENT. For first two weeks restrict to careful antidiabetic diet, unless sugar in urine practically disappears in less time. Then cautiously increase carbohydrates, always warning patient of danger of overeating *permissible* articles. Should sugar persist, put to bed and restrict to 1 raw egg and 2 ounces of olive oil 3 or 4 times a day. Continue free use of a mildly alkaline drinking water. If any acidosis symptoms result, decrease amount of oil and give small quantities of carbohydrates. Proper mastication an important detail in treatment. For constipation, use: Olive oil, castor oil, glycerin, of each, 160 parts; gum arabic, 18; flavoring (oil of cassia or gaultheria), 0.5. Best diabetic flour is: Unadulterated soy-bean flour, 350 parts; unground poppy seed, 30; eggs, 250; pure baking powder, 15; water, 340. *Hodgson.* 39

Cultures of lactic acid bacillus given to 13 cases in doses of 4 to 16 c.c. (1 to 4 drams) three times daily. Indican and sugar in urine both markedly reduced. Results probably due not only to removal of putrefaction, but also to partial inhibition of carbohydrate digestion by the bacilli, as indicated by experiments *in vitro*. *Horowitz.* 235

Necessity for individualization in prescription of diet emphasized. Low carbohydrate tolerance does not imply necessity of ingestion of an excess of meat. In all grave cases meats are dangerous. Vegetables are to be preferred, and those should be prescribed which, while containing a high percentage of carbohydrates, are well assimilated in the individual case. Large amounts of fats are often dangerous. *Graul.* 286

Iodine treatment considered indicated in diabetes in elderly persons. Sajodin, 3 tablets of 0.5 Gm. (7½ grains) each, given daily one after meals, found to cause marked reduction of previously obstinate glycosuria and general improvement in 3 cases aged, respectively, 66, 52 and 62 years. *Lorand.* 412

Diarrhea, Infantile. TREATMENT. 1. Where vomiting a prominent symptom: Iodine solution, consisting of 3 minims (0.2 c.c.) of the tincture in 1 ounce (30 c.c.) of water; one small teaspoonful to be given every two hours, before feedings. 2. Calomel, ⅛ grain (0.01 Gm.), with bismuth subcarbonate, 2½ grains (0.15 Gm.). 3. Some carminative mixture, with addition of rum if signs of collapse. 4. Where mucus and blood in stools: Sodium sulphate or phosphate, with a little opium tincture in bad cases. 5. Where persistent vomiting of food or medicine, falling temperature with aggravation of other signs, or exhaustion shown by sinking of eyes and loss of skin elasticity, hypodermoclysis of following solution to be practised: Sodium chloride, 0.9 per cent.; potassium chloride and calcium chloride, of each 0.02 per cent., and sodium bicarbonate, 0.01 per cent. Dose of

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solution, 25 to 150 c.c. (6 drams to 5 ounces), according to rapidity of absorption, average being 60 c.c. (2 ounces). Large doses to be given two or three times a day where signs of failing circulation. Injections contraindicated where very high fever. *Day.* Page 473

Diphtheria. TREATMENT. Intravenous administration of antitoxin advised in cases of malignant diphtheria; 5000 units thus given are equivalent to 20,000 subcutaneously. No bad results from intravenous use in nearly 200 cases. Serum to be warmed to blood heat before injecting. In little children one must cut down on the vein. Intramuscular injections are absorbed in one-half the time required by subcutaneous ones. *Park.* 413

Dupuytren's Contraction. TREATMENT. Thyroid substance continuously administered in doses of 0.1 Gm. (1½ grains) found markedly beneficial in 5 cases. *Gilbert.* 173

Eclampsia, Puerperal. TREATMENT. Report of 11 cases in which squeezing out of colostrum from breasts, thoroughly carried out, appeared usually beneficial. *Walcher.* 286

Eczema. TREATMENT. Involved areas must be cleansed and kept aseptic. Apply 2 per cent. solution of aluminum subacetate and dust with starch powder. For vesicular eczema: Liniments with zinc carbonate or ichthyol. In recurrent cases paint with iodine tincture and cover with zinc oxide paste. Touch up rhagades with 3 to 5 per cent. silver nitrate solution. *Ravogli.* 547

Edema of Extremities. TREATMENT. Where edema of legs resisted all measures, especially where incision not permitted, good results obtained from local use of hypertonic saline solutions—25 to 50 Gm. (¾ to 1½ ounces) of sodium chloride to 1 liter (quart) of distilled water. Soak gauze compresses lightly in this, wrap around legs, and cover with thick layer of absorbent cotton, held in place by bandages. Leave dressing on overnight. Equally good results in edemas due to broken compensation, Bright's disease, etc. *Pathault.* 40

Endocarditis, Chronic. TREATMENT. Three cases stated to have been cured by injections of fibrolysin in conjunction with concussion of the seventh cervical spine to elicit the cardiac reflex of contraction. *Abrams.* 394

Epididymitis, Gonorrheal. TREATMENT. Epididymotomy performed in 16 consecutive cases, 1 bilateral. Result: Sudden and permanent relief from pain; defervesence in two days; rapid reduction in swelling; prompt healing; early convalescence without relapse. *Culler.* 348

Epilepsy. TREATMENT. Solution of 1 part of phosphorus in 10 parts of oil used in 9 cases of severe epilepsy, and generally caused pronounced reduction in frequency of attacks. Enterogenous autointoxication to be overcome before phosphorus begun. *Leubuscher.* 348

Epistaxis. TREATMENT. With patient sitting in chair, stand behind him, place index fingers of both hands beneath body of lower jaw on each side, with thumbs resting behind angles, and make gentle traction upward upon head, and simultaneously extend it backward as far as patient can comfortably bear. Sets up artificial anemia in nose and head in general, causing epistaxis to cease. Desist in one or two minutes, or consciousness may be partly or wholly lost. *Ritschl.* 165

Erysipelas. TREATMENT. Local application of buttermilk on soft rags, latter to be kept constantly wet with it, gave uniformly favorable results. *Arnold.* 479

Eye Injuries. TREATMENT. Following formula used for disinfection of cornea, especially after extraction of foreign bodies: To 2¼ grains (0.15 Gm.) of stovaine, finely pulverized and dissolved in 5 drops of oil, add, after mixing, preferably on a water bath: Hydrated wool-fat, gr. lxxv (5 Gm.), and petrolatum, ʒiiss (10 Gm.). Then add gradually: Iodine, gr. ii¼ (0.15 Gm.); sodium iodide, gr. ivss (0.3 Gm.); water, ♏xxiv (1½ Gm.). *Dewaele.* 237

In simple abrasions of cornea: 1. Irrigate conjunctival sac thoroughly with normal saline or boric acid solution. 2. Drop argyrol in eye. 3. Fill conjunctival sac with a sterile medium consisting of petrolatum, ʒvj (180 Gm.); mercury bichloride, gr. j (0.06 Gm.), and sodium chloride, gr. v (0.3 Gm.). Where cornea already infected and ulcer present, sterilize area with phenol, removing excess with alcohol; or else, touch lightly with platinum probe at red heat. In wounds of cornea: 1. Cleanse eye thoroughly. 2. Cut off any projecting iris. 3. Drop in atropine and argyrol. 4. Fill with sterile petrolatum. In burns of eye: 1. Fill with sterile petrolatum. 2. Move eyeball and lids frequently to prevent adhesions. Where sclera wounded: Draw conjunctiva over wound and stitch together. *White.* 240

Scarlet red, 1 per cent. in petrolatum or petrolatum and lanolin, equal parts, found to promote rapid healing in corneal or conjunctival abrasions, wounds, or burns. A minute portion of the ointment is placed on conjunctival surface of everted lower lid and a pad and bandage applied, once daily or on alternate days. Atropine also to be used, if indicated. *Allan.* 359

Fibroid Phthisis. TREATMENT. Where profuse expectoration of pus, creosote often best remedy. Dose, 3 to 5 drops (0.18 to 0.3 c.c.) three times daily, given over a long period. Creosote carbonate more easily tolerated; dose, 15 to 25 drops (0.9 to 1.5 c.c.) per day. *Fishberg.* 180

Filariasis. TREATMENT. Case of pronounced elephantiasis of lower extremities

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in which two intravenous injections of 0.6 Gm. of salvarsan caused disappearance of filariæ from blood and great reduction in size of limbs, weight falling from 400 to 244 lbs. *Barnes.* Page 1

Fistula, Rectal. TREATMENT. Injection of 1 per cent. aqueous formaldehyde solution recommended in all varieties of rectal fistula. Care to be taken that external opening of fistula allows free drainage for a few days. *Roehr.* 479

Fracture of Forearm. TREATMENT. To correct overriding of fragments, attach to hand, anteriorly and posteriorly, as separate straps, zinc oxide adhesive plasters 2½ inches in width, reading from above wrist to 6 inches beyond extended fingers, and fixed above wrist and about knuckles with encircling strips. Apply usual splint dressing and also a plaster-of-Paris encasing bandage, including hand and lower arm. When this firm, include beneath enveloped forearm, by more turns of plaster bandage, a light, flat wooden splint projecting 1 or 2 inches beyond extended fingers. To a cross-piece at end of this, projecting an inch, attach the double adhesive strap from hand with tacks, thus keeping bony fragments from overriding. *Miel.* 165

Fracture of Hip, Intracapsular. TREATMENT. Longitudinal traction alone often unsatisfactory in results. Longitudinal combined with lateral traction, however, or wide abduction in plaster of Paris, usually gives serviceable limb. Former far easier to apply and the more suitable the older the patient. Plaster-cast method requires much skill in application, and is better adapted to young patients. *Davis.* 41

Gangrene. TREATMENT. Alternate hot (95° F., gradually raised to 131° F.) and cold (room temperature) baths up to knee used with success in a case of sclerotic gangrene of leg. Pain relieved and normal color regained. Alternate immersions practised 30 to 50 times, morning and evening, for over a year. *Borchardt.* 348

Alternate lowering and raising of leg to horizontal position yields an effect similar to that of hot and cold baths in leg gangrene. *Moszkowicz and Frank.* 348

Gastric Pain. TREATMENT. Following combination recommended: Sodii bicarbonatis, gr. xij (0.75 Gm.); magnesii ponderosi, gr. iv (0.25 Gm.); pulveris belladonnæ foliorum, gr. ⅙ (0.01 Gm.). Where pain in association with gastric motor insufficiency, 2 of above powders should be taken an hour and a half-hour before, and again a half-hour and an hour after, each meal. Where delayed evacuation is due to pyloric spasm produced or kept up by hypersecretion, the powders should be taken during whole digestive process, beginning an hour after meals and continuing at intervals of an hour and a half until next meal. *Binet.* 480.

Gastric Ulcer. TREATMENT. Best preparation of bismuth to use is the subnitrate precipitated from a boiling-hot mixture. Cleanse stomach in morning with 150 c.c. (5 ounces) of Carlsbad or Vichy water, and three-quarter to one hour later give 10 to 20 Gm. (2½ to 5 drams) of bismuth subnitrate suspended in tumblerful of warm water. Administer daily, and increase or reduce dose, or discontinue, more or less rapidly, according to clinical course (Fleiner). Another method is to give same doses of bismuth finely suspended in oil, several times daily. Stepp recommends following bismuth suspension: Bismuthi subnitratis, gr. xlv (3 Gm.); chloroformi, ♏xv (1 c.c.); aquæ destillatæ, 5 fluidounces (150 c.c.); 1 to 2 tablespoonfuls to be taken hourly for several weeks. *Aaron.* 42

1. Absolute rest in bed. 2. No food for five to seven days. 3. Morphine hypodermically, until hemorrhage has ceased. 4. Ice-pack on abdomen, or hot applications in absense of hemorrhage. 5. Move bowels by enema, if necessary; where no hemorrhage, give citrate of magnesia or Carlsbad salts. 6. Bismuth subnitrate in 30-grain (2 Gm.) doses, with magnesium hydrogen dioxide (25 per cent.) in 7½-grain (0.5 Gm.) doses three times daily. Give boiled water if necessary to insure retention of these drugs. 7. Rectal alimentation, giving 500 c.c. (1 pint) of 10 per cent. dextrose solution at body temperature every six hours, by Murphy drop method. 8. Return to mouth feeding as soon as possible, according patient's condition, beginning with small doses of albumin water several times daily. *Gompertz.* 139

Injections of atropine recommended to quiet pain and diminish pyloric spasm; especially of service in acute cases. Injection of ¼ mgm. (1/256 grain) to be given three times the first day, then 1 mgm. (1/64 grain) given in 2 doses the second day, then 1½ mgm. (1/42 grain) divided in 3 doses daily for ten to twelve days. *Mathieu and Giraud.* 414

Gastrointestinal Disturbance, Infantile. TREATMENT. Where constipation present, with retention of toxic food derivatives and symptoms such as high fever, tympanites, stupor, etc., give a 2-grain (0.12 Gm.) dose of calomel in candy form, followed in an hour or two by large dose of castor oil with ¼ its volume of equal parts of aromatic syrup of rhubarb and port wine. Keep child quiet on back. If doubt whether cathartic can work in time, give hot colon flushes to start intestinal action, or in obstinate cases, following enema: Epsom salt, glycerin, of each, 8 ounces; turpentine, 1 dram, and water, to 2 quarts, given at 110° F.

Subsequent treatment: Diet of toast water or good beef broth alone until temperature nearly normal. Calomel, 1 grain divided, followed by the castor-oil compound, every day and later on alternate days till stools normal.

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After this, equal parts of aromatic fluidextract of cascara sagrada and glycerin. *Freeburg.* Page 292

Gout. TREATMENT. Atophan used in 48 cases — acute, neuritic, and chronic — with greater relief than had been obtained from other remedies, except in the chronic cases, in which effects were slight. Gouty sore throat and coryza also generally benefited. Dose, 30 to 60 grains (2 to 4 Gm.) a day, in 7½-grain (0.5 Gm.) tablets, 1 or, in severe cases, 2 after each meal and at bedtime, or every two or three hours. *Kahlo.* 350

Headache. TREATMENT. Migraine and other forms of severe headache relieved by causing copious flow of nasal secretions, thus removing congestion of dura and pia. Formulæ used: I. Mentholis, gr. viiss (0.5 Gm.); acidi borici, gr. xv (1 Gm.); iridis florentinæ, saccari lactis, of each, 3ss (2 Gm.). II. Pulveris mayoranæ, iridis florentinæ, of each, gr. xv (1 Gm.); sacchari lactis, 3ss (2 Gm.); veratri (albi), gr. ii¼ (0.14 Gm.). *Lorand.* 237

Treatment of "indurative" variety considered. 1. Saline purge. 2. Rest in bed. 3. Affected muscles to be kept at rest. 4. Free diaphoresis at outset of attack. 5. Hot fomentations or bags *loco dolenti* for several hours. 6. Salicylates in full doses often effective in acute cases. 7. Colchicum and alkalies, if patient gouty. 8. Applications of chloral, menthol, and camphor rubbed together, locally. 9. Massage. 10. Vibration, except where arteriosclerosis. 11. Rhythmically reversed electric current. 12. In chronic cases with marked fibrosis: Potassium iodide and general tonics, or ionization with 2 per cent. sodium salicylate or lithium iodide solution. *Beling.* 291

Hemoptysis. TREATMENT. Subcutaneous injection of 40 c.c. of sterile gelatin solution recommended. Causes in twenty-four hours rise in viscosity of blood by 1.4 of original value. *Cmunt.* 110

To prevent onset of hemoptysis where sense of tightness in chest or sputum blood-streaked: 1. Absolute rest. 2. Nitroglycerin solution, ♏xv (1 c.c.), or sodium nitrite, gr. xv (1 Gm.), in ℥ij (60 c.c.) of water; ℥j (4 c.c.) every four hours for two or three days.—Where actual hemorrhage: 1. Put to bed in comfortable position. 2. Reassure patient. 3. Amyl nitrite inhalation. 4. Atropine, gr. 1/50 (0.0012 Gm.) hypodermically, to be repeated 2 or 3 times in next twenty-four hours. 5. Or, nitroglycerin, gr. 1/100 (0.0006 Gm.) hypodermically, at first every half-hour for 3 or 4 doses, later less often; followed by sodium nitrite, gr. j (0.06 Gm.) every three or four hours. 6. Where excessive nervous irritability, or cough troublesome: Morphine. 7. In abundant hemorrhages: Apply bandages to middle of arms and thighs. 8. Epinephrin hydrochloride, 5 drops of 1: 1000 solution, or suprarenal substance, 3 grains (0.18 Gm.), every three or four hours; or pituitary extract, injected subcutaneously. *Frazer.* 111

Hemorrhage. TREATMENT. In operations where bleeding from bone troublesome, cut a fragment of muscle from any convenient place in operative field and apply to bleeding bony surface or edge. Rub in if it will not adhere at first. Always efficient in arresting the bleeding. *Vaughan.* 290

Thermocautery employed with success in 2 cases of hemophilia to arrest hemorrhage that had proven rebellious to pressure, epinephrin, gelatin, etc. *Hahn.* 416

Hemorrhage, Gastrointestinal. TREATMENT. Where only occult blood: Rest in bed, on diet of 3 or 4 liters (quarts) of milk, with Carlsbad water, until no blood detected for three or four days. Where liver or spleen enlarged and Wassermann positive: Specific treatment. For severe hemorrhage from any cause: (1) Diet limited to cold tea, ice-cold milk or egg-white jelly, taken regularly in very small amounts. (2) Saline enteroclysis by drop method, 1 liter each day, with 15 drops of 1: 1000 epinephrin solution added. (3) Ice-bag. (4) Gelatin in severe cases. (5) Rectal injections of calcium chloride. (6) Gastric lavage with ice-water, where clots palpable in stomach. *Boas.* 351

Hemorrhoids. TREATMENT. Olive oil a good demulcent laxative in hemorrhoids and anal fissure. *Bram.* 47

Where not much inflammation or hemorrhage, following ointment advisable: Cerati, olei amygdalæ expressi, zinci oxidi, of each 3iiss (10 Gm.); balsami Peruviani, gtt. iij. Piece of this of size of hazelnut to be introduced high up through anus morning and evening, and especially before stool. Where much hemorrhage, following may be used: Chrysarobini, gr. xij (0.8 Gm.); iodoformi, gr. v (0.3 Gm.); extracti belladonnæ fol., gr. x (0.6 Gm.); petrolati, ℥j (30 Gm.). Hot water or antipyrin in powder or 2 per cent. solution equally effective and less irritating. Where intense itching: Aluminis, gr. xv (1 Gm.); camphoræ, gr. xij (0.75 Gm.); adipis benzoinati, ℥j (30 Gm.). Where much moisture and also itching, 10 per cent. bismuth subsalicylate powder useful. If much congestion, use: Bismuthi subsalicylatis, zinci oxidi, of each gr. lxxv (5 Gm.); talci, ℥iij (90 Gm.). In voluminous, readily prolapsing or bleeding hemorrhoids, an injection of olive oil should be taken every evening before retiring. *Plicque.* 166

Rectal injections of pure crystallized calcium chloride strongly recommended for hemorrhage due to hemorrhoids. *Boas.* 351

Injection method used in about 450 cases with good results. Solution employed: Phenolis, 3j (4 Gm.); glycerini, q.s.; aquæ, q.s. ad 3x (40 c.c.). Phenol and water to be first mixed, then glycerin added drop by drop, stirring. About 50 per cent. of all cases could be safely treated and cured by injections. Clamp and cautery to be preferred, however, where patient not opposed to operation and there is no contraindication. Cases especially suited for injection method:

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(1) the markedly anemic; (2) tuberculous subjects; (3) where organic disease contraindicates anesthesia, particularly if subjects highly nervous; (4) bleeders. Not over 10 minims of the 10 per cent. phenol solution to be used at one sitting. No superficial necrosis, abscesses or thrombosis in author's cases. *Humphreys.* Page 351

Hepatic Cirrhosis. TREATMENT. Four cases improved or apparently cured by limited milk diet (6 glasses), medical treatment, including administration of hexamethylenamine, and insurance of regular bowel movements. Alcohol to be forbidden. After improvement, milk to be increased to 8 glassfuls, and later fruit allowed. Milk or almost exclusive milk diet to be continued for at least two months, and followed by light diet of simple foods. *N. S. Davis, Jr.* 548

Hyperchlorhydria. TREATMENT. Where patient constipated at beginning of treatment, give suspension of magnesia and bismuth just after and again one and a half hours after meals; each dose to represent 6 grains (0.4 Gm.) of magnesium hydroxide and 22 grains (1.5 Gm.) of bismuth subnitrate. Continue for three to five days, and, if evacuations still too frequent, use instead a powder containing equal *volumes* of magnesium oxide and magnesium carbonate, with a little powdered charcoal and sometimes bismuth. Less magnesium oxide should always be prescribed than is capable of neutralizing completely all the acid present. *Tupper.* 167

On a diet as nearly salt-free as possible without special preparation of foods before they reach the cook, hyperchlorhydria almost invariably abates. *Benedict.* 354

Ileocolitis, Infantile. TREATMENT. In "putrefactive diarrhea" of infants, all irritating food should be avoided as, by causing increased mucous flow, it favors bacterial pullulation. Use of proteid of cows' milk, obtained by removing whey from skimmed milk with chymogen or pepsin, advisable. Break up curd into fine particles and suspend in 5 per cent. gelatin water, to be heated before administration. After four or five days to a week replace gelatin water partly by buttermilk, and skimmed-milk curds by whole-milk curds, gradually getting child on albumin-milk and finally on whole-milk mixture. *Grulee.* 168

Impetigo Contagiosa. TREATMENT. Remove all crusts, wash raw surfaces with bichloride solution, make a fresh paste by adding a few drops of mercury bichloride and ammonium chloride solution (1: 2000) to small quantity of zinc oxide, and apply to irritated places twice daily. *Hiden.* 182

Infections, Pyogenic. TREATMENT. Dilute sulphuric acid in 20- or 30- minim (1.25-2.0 c.c.) doses, diluted with 2 oz. (60 c.c.) of water, every four hours, found very useful in treatment of carbuncles, boils, and other local pyogenic infections. Rapid circumscription and granulation of affected area follows. Dressing of 1: 20 carbolized petrolatum used externally. Same measure found useful in early sepsis, inflamed lymphatics, blind boils, recurrent pimples and acne. In bronchiectasis and phthisis sputum becomes less purulent and less in amount. *Reynolds and Reynolds.* 284

Influenza. TREATMENT. Care to secure proper ventilation, alimentation, and elimination necessary. Local treatment of air passages important, to destroy causative bacillus. In the morning: 1. Cleanse nose and throat with spray of Dobell's solution or 1: 400 phenol solution at 85° to 90° F. 2. Swab with: Balsam of Peru, gr. x (0.6 Gm.); ichthyol, gr. v (0.3 Gm.); glycerin, q. s. ad f℥ij (60 c.c.). In the evening: 1. Repeat spray. 2. Have patient inhale for one-half hour creosote, 8 c.c. to quart of water. 3. Swab nose and throat with epinephrin solution. 4. Fifteen minutes later swab with argyrol, 10 per cent. Hydrotherapy of value in chronic cases. In severe chronic cases, sojourn in an even and sunshiny, but not tropical or subtropical, climate desirable. *Jones.* 111

Inversion of Uterus. TREATMENT. To arrest hemorrhage, place elastic band around base of uterus in vagina just tightly enough to check flow of blood, but no more; take off band when bleeding stopped. Where inversion incomplete, tampon vagina, and perhaps also suture vulva together. Reduction of uterus not to be attempted until shock recovered from; otherwise, mortality considerable and reduction frequently fails. Reduction to be done under general anesthesia, with pelvis elevated. Operator to exert pressure near orifice of one tube with tips of fingers, using rest of hand for counter-pressure. *Zangemeister.* 354

Iritis. TREATMENT. Sinus infection considered responsible for many cases of intraocular inflammation. Following treatment used with good results in 26 cases of iritis and 5 of idiopathic retinochoroiditis: Saturate tampon, of such size as to fit snugly between middle turbinate and septum and extend from exterior portion of nose to sinus posteriorly, with aqueous argyrol solution (gr. xl-℥j) and introduce. This will drain ethmoid and other sinuses. To drain antrum, place tampons under scroll of middle turbinate and above upper part of inferior turbinate. Allow to remain twenty minutes to one hour. *Manning.* 112

Lead Poisoning. TREATMENT. Obstinate lead colic relieved and constipation overcome by giving a tumblerful of olive oil once daily. *Bram.* 47

Leukemia. TREATMENT. Benzol (benzene) used in 6 cases of myeloid leukemia and 1 of Hodgkin's disease with good results. Given in capsules each containing 0.5 Gm. (8 minims), with same amount of olive oil; at first, 4 capsules daily, after meals, then 2 capsules 3 times daily, later 4 times, and finally 5 times. Leucocyte count gradually

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lowered to normal, fever disappears, and general condition improved. Effectual where other measures, including X-rays, have failed. *Kiralyfi.* Page 114

Benzol in doses of 7 minims (0.5 c.c.), increased to 15 minims (1 c.c.), in capsules, after meals and at bedtime, given in 5 cases—4 myelogenous and 1 lymphoid. Results: Rapid fall in leucocytes, resulting in leucopenia in 3 cases; diminution in size of spleen; improved red cell count and hemoglobin; disappearance of lymph-nodes in lymphoid case; improved general condition. Use of drug should be controlled by frequent blood examinations. *Billings.* 293

Marasmus. TREATMENT. Large series of infants with marasmus, congenital or acquired, and premature infants, treated with marked success by external application of codliver oil. Wrap child in oil-soaked flannel from armpits to iliac crests, and cover with oiled silk. Remove flannel, wash skin with soap and water, and reapply flannel, at twelve-hour intervals. Give only water by mouth, in ample quantity. Treatment causes rise in temperature, loss of dryness and wrinkles of skin, and an increase in weight, often considerable. Feed by mouth only when temperature has been normal for a number of days and skin shows increase in fat and water content. *Gray.* 114

Measles. TREATMENT. Following measures employed in 160 cases: (1) hot bath, followed by (2) application of eucalyptus oil to whole body except hands and part of face about mouth, nose, and eyes; (3) mouth irrigated twice daily with weak alum lotion, and glycerin and borax applied to interior of mouth and gums; (4) tonsils and fauces treated with 1: 10 phenol morning and evening, using firm cotton mop on end of forceps; (5) blanket-bath given morning and evening for four successive days, followed by general oil rubbing. Treatment reduced mortality and had favorable influence on course of disease. Careful nursing and maintenance of an even air temperature of 65° F. important accessory measures. *Connolly.* 239

Nephritis, Acute. TREATMENT. Saline proctoclysis advised in acute nephritis in children. Tends to relieve edema and subjective symptoms and improve condition of urine. Normal salt solution, kept at about 110° F. by hot-water bottles surrounding graduated container, passed into rectum through soft-rubber catheter, which is inserted about 6 to 8 inches after a cleansing enema. Procedure also useful in acute infectious diseases and toxemic diseases, as well as before and after ether anesthesia. *Lowenburg.* 171

Renal decapsulation practised after appearance of anuria in 2 cases of nephritis due to acute mercurial intoxication. Both cases ultimately died, but not from anuria, urinary function having been resumed. *Tisserand.* 295

Nephritis, Chronic. TREATMENT. Following treatment advised: (1) Exercise to be allowed unless hematuria occurs,—avoiding overexertion. (2) Frequent long vacations. (3) Diet: Limit proteids to amount that will maintain bodily strength (80 to 100 Gm., a third at most in the form of meat, *i.e.*, 130 to 160 Gm. of meat weighed raw); preserved meats, except mild ham, to be forbidden; rest of proteids to consist of milk, eggs and vegetable albumins; amount of fat and carbohydrates to depend upon general nutrition, and should cause neither undue gain nor loss of weight. (4) Salt intake to be restricted in so far as it does not interfere with palatability of food; to be prohibited only where edema. (5) Restriction of fluid to 1¼ to 1½ liters a day, except one day weekly, on which amount is raised to 2½ liters. In "secondarily contracted kidney" about 2 liters should be allowed daily. (6) Carefully prescribed gymnastics for the heart. (7) Baths and massage; especially, lukewarm baths followed by cold douches and vigorous rubbing, in alternation with electric or carbon dioxide baths. (8) Diuretin, 7½ grains (0.5 Gm.) three times a day for a month, every third or fourth month. (9) Warm, dry climate, with avoidance of considerable altitudes. *Von Noorden.* 357

Neuritis. TREATMENT. Place long electrodes consisting of absorbent cotton wrapped in gauze, parallel in pairs along limbs or spinal column. Current to be transmitted through metallic bands of suitable length. Intensity of current 60 to 80 milliampères for an arm and 100 to 125 for a lower limb. Sitting to last three-quarters to one hour, and be frequently repeated. Method used in nearly 600 cases, with excellent results. Traumatic myelitis benefited. *Hirtz.* 420

Ophthalmia, Gonorrheal. TREATMENT. Stock gonococcic vaccines used in 9 cases, causing prompt reduction of swelling and protecting deeper corneal and conjunctival tissues from invasion. Initial dose for babies, 50 millions; subsequently 100 millions. For adults, double these doses. Local cleanliness and antisepsis to be simultaneously maintained. *Mittendorf.* 349

Otitis Media. TREATMENT. Where discharge copious, syringe ear gently but thoroughly 2 or 3 times daily with saturated boric acid solution, or, better, mercury bichloride solution, 1: 8000, sometimes later 1: 4000. Where discharge scanty, first cleanse ear with cotton mop, or if acute stage of attack passed drive out discharge by Valsalva method or Politzer bag and wipe out again. Then have patient incline head and pour in bichloride solution, allow to remain ten minutes, dry ear, not very thoroughly, and plug meatus with absorbent cotton. Do this not oftener than once daily. Exceptionally, especially where there is extensive destruction of drumhead, insufflation of boric acid, or of boric acid and aristol

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or zinc oxide, equal parts, proves more efficacious than the mercury solution. *Theobald.* Page 116

In long-standing cases of chronic catarrhal otitis media that have resisted usual measures, cocainize parts, insert fine catheter into middle ear, and with syringe inject through it 5 to 10 minims of 10 per cent. argyrol solution. Causes inflammatory reaction and pain for forty-eight hours, but hearing is markedly improved. *Hays.* 296

Following measures advised in chronic otitis media: 1. Restricted diet, mainly of vegetables, fruit and buttermilk; prohibition of red meats and pastries. 2. Calomel, 5 or 10 grains, followed in six or eight hours by 1 ounce of castor oil, and this, in three or four hours, by ½ oz. of magnesium sulphate and 1 dram of sodium bicarbonate in 6 ozs. of carbonated water. Magnesium sulphate, 1 dram, daily before breakfast for from two to four weeks. 3. Sodium or strontium iodide, 1 to 5 grains; sodium or strontium salicylate, 5 to 10 grains, and tincture of nux vomica, well diluted, 3 times daily after meals. 4. Removal of nasopharyngeal and faucial abnormalities. 5. Alkaline wash used with nasal cup two or three times daily to keep nasopharynx clean. 6. Vibratory massage over subglenoid fossa, with gentle inflation of middle ear with vapor of chloroform, iodine or menthol, two or three times a week. 7. Where membrane relaxed and flabby: Paint posterior inferior quadrant with tincture of iodine (25 per cent.) once or twice a week, or with flexible collodion. 8. Small doses of thyroid extract. 9. Thiosinamine in cases with well-defined adhesions. *Stucky.* 297

In acute otitis media, otitis externa, myringitis, and furuncle of auditory canal, mixture containing 5 per cent. each of phenol and ichthyol in glycerin found very efficacious. *Nelson.* 488

Pancreatitis, Subacute. TREATMENT. 1. Rest. 2. Limitation of diet. 3. After acute attack of pain has passed off, cholecystostomy. *Archibald and Mullally.* 360

Paralysis, General. TREATMENT. Hexamethylenamine, gr. x (0.6 Gm.) thrice daily, found effectual in preventing retention of urine and avoiding necessity for catheterization. *Baird.* 242

Pediculosis Capitis. TREATMENT. Lay patient on back on bed with head over edge, hair lying in a basin beneath head on a chair. Pour 1:40 phenol solution over hair into basin and sluice backward and forward until hair thoroughly soaked, especially over ears and at nape of neck. Continue sluicing ten minutes, then lift hair from basin and allow to drain, without drying it. Then swathe head with thick towel or large piece of flannel and allow to remain for an hour. Finally wash hair or simply allow to dry. Method entirely safe with children of 5 years and over. Hair not damaged. *Whitfield.* 173

Pellagra. TREATMENT. Gelsemium followed by much improvement in 5 cases. Fluidextract, 3 or 4 drops every four hours, given. Discontinue drug if ptosis or diplopia occurs. *Blosser.* 174

Pelvic Inflammation, Chronic. TREATMENT. Following procedure of massage used with good results in chronic perimetritis with adhesions, chronic parametritis, shortening of uterosacral ligaments with uterine retrodisplacement, and old pelvic exudates: steady and slightly lift up cervix with index and middle fingers of left hand, and with right hand, by rotary movements, massage uterus through abdominal wall, slowly, and only 10 to 15 times at the first treatment. If no unusual pain or soreness follows, repeat three times weekly until symptoms relieved. Where uterus retroverted, place inside fingers against anterior portion of cervix and push posteriorly, at same time bringing uterus forward with outside hand. *McMorrow.* 421

Pemphigus. TREATMENT. Case of refractory pemphigus in which intravenous injection of blood from patient's husband, without previous defibrination, was followed by complete recovery. *Praetorius.* 422

Placenta Prævia. TREATMENT. Pituitrin used with good results in 16 cases. If only a small portion of placenta presents, and especially if vertex presents and cervix is sufficiently dilated, membranes should be ruptured and pituitrin given. In other cases employ combined version with pituitrin, and await spontaneous delivery, merely extracting arms and head. Where dilatation insufficient for combined version, insert small dilating bag or vaginal tampon, and later do version and give pituitrin. *Trapl.* 423

Pleurisy. TREATMENT. Autoserotherapy advised in all cases of pleural effusion where fluid not purulent. Upon exploratory puncture, do not withdraw needle entirely, but inject 2 to 5 c.c. of the fluid when its point is in subcutaneous tissue. In favorable cases, general amelioration in two or three days; in about 80 per cent. of cases fluid will disappear in a week or ten days. In some patients treatment may have to be repeated several times every two or three days before benefit appears. *Fishberg.* 425

Pneumonia, Lobar. TREATMENT. Sodium citrate internally found in most cases, especially in children, to cause fall in temperature, pulse, and respiration to normal within twenty-four hours; process in lung clears up soon after, third stage being apparently escaped. Administered in doses of 30 to 40 grains (2 to 2.6 Gm.) in adults every two hours, with a little citric acid or in lemonade. Dose for children to be calculated from 40-grain dose in adults. Drug to be continued till clearing up of process in lung complete. Active catharsis to be established at beginning of treatment. Sodium chloride should be supplied to system in about the normal daily amount (240

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grains, or 16 Gm.), with the diet or otherwise. *Weaver.* Page 116

Administration of calcium chloride in 10-grain (0.6 Gm.) doses every four hours advised, from outset until three days after defervescence. Patients given it seem to do better than others. *Cornwall.* 175

Creosote carbonate observed to lower temperature considerably and diminish somnolence or delirium in pneumonic processes in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first 3 years; in fifth and sixth years, 20 drops (2 Gm.) and in seventh to tenth years, 25 to 30 drops (2.5 to 3 Gm.). Administered readily in a spoonful of warm milk. To be continued in ½ doses for a week after auscultatory signs have disappeared. *Hunäns.* 162

Use of a 20 per cent. solution of camphor in olive oil previously washed with alcohol recommended in both lobar and bronchopneumonia. Mortality seemed lowered by post-trochanteric injections of this. Dose in cases of intermediate severity, 10 c.c. (2½ drams); in grave forms 15 and even 20 c.c. (3¾ and 5 drams), ½ the amount being injected morning and evening. In children 1 c.c. (16 minims) for each year of age is given. *Certain.* 299

Following mercury and sulphur combination advised in both lobar and lobular pneumonia: Hydrargyri chloridi corrosivi, gr. ss (0.03 Gm.); sulphuris præcipitati, ʒij (8 Gm.); aquæ destillatæ bullientis, fʒiv (120 Gm.). This is to be shaken and then quickly given in the dose of 1 teaspoonful every two or three hours for two or three days. If, when the thirty-second dose is reached, catharsis has not occurred, ½ ounce (15 c.c.) of castor oil is given. Cessation of fever and loosening of cough promptly follow these measures; lung infection is apparently cut short. After evening temperature is normal, the mercury-sulphur mixture is continued for several days longer at four- to six- hour intervals. *Kolipinski.* 402

Vaccine treatment recommended. Stock vaccine sufficient, and should be begun as soon as diagnosis made. Inject 50 million bacteria as first dose, then increase rapidly, giving 100 million on second day, 200 million on third, etc., provided temperature has not abated after first injection; if it has, no further injection necessary. Marked relief from pain and dyspnea procured. *Bispham.* 552

Poisoning by Illuminating Gas. TREATMENT. I. First stage, preceding loss of consciousness: 1. Fresh air. 2. Aromatic spirit of ammonia. 3. Effervescent sodium phosphate, to produce eructations and relieve nausea. 4. Oxygen inhalation. 5. Analgesics for headache. 6. Avoidance of violent exertion.—II. Second stage, patient unconscious, but breathing: 1. Howard artificial respiration, rhythmic compression of lower thorax, to assist breathing. 2. Oxygen, preferably under pressure. 3. Camphor, caffeine, digitalis, and strychnine hypodermically. 4. External heat, if indicated. 5. Massage of muscles after aërating lungs. 6. Treatment to be conducted in warm room. 7. If not prompt recovery, venesection and normal saline infusion, or use of "pulmotor."—III. Third stage, patient unconscious and not breathing: 1. Same measures as in preceding stage. 2. Blood transfusion. 3. Artificial respiration by Schäfer method, patient prone. *McCombs.* 44

Psoriasis. TREATMENT. Potassium permanganate, 2 tablespoonfuls of a saturated solution added to a warm bath, recommended for acute universal psoriasis. After soaking in this for ten or fifteen minutes, patient to dry himself thoroughly and apply following lotion: Amyli, talci, of each, 40 parts; glycerini, 20 parts; acaciæ, 1 part; liq. plumbi subacetatis, 4 parts; liq. picis carbonis, 26.5 parts; aquæ, 200 parts. Tar baths, preparing by adding 1 or 2 glasses (ʒviij or xvj) of an emulsion of coaltar, also excellent, though a tar salve, rubbed in after a bath, is often better. Following paste found efficient in some obstinate old patches: Acidi salicylici, 10 parts; chrysarobini, olei rusci, of each, 20 parts; saponis viridis, adipis lanæ hydrosi, of each, 25 parts. Cover with oiled silk. A lotion of 1 part of lead subacetate solution to 5 of liquor picis carbonis, diluted 3j-Oj, may be used to envelop the part, covered with oil-silk, and allowed to remain all night. *Montgomery.* 175

Puerperal Sepsis. TREATMENT. 1. Complete physical and mental rest. 2. Well-ventilated room with sunshine. 3. Fowler position. 4. Cold sponging and ice-bag to head for hyperpyrexia. 5. Ice-bag locally in case of localized pelvic inflammation. 6. Saline enteroclysis by drop method. 7. Serum or antitoxin, to be followed by reliable stock vaccine if blood count favorable and patient lacks sufficient reaction to combat infection. 8. Whisky, quinine, etc., to be avoided. 9. Careful feeding at regular intervals. 10. Breast nursing to be stopped unless mental effect too depressing. 11. Curettage only for hemorrhage indicating foreign body in uterus. 12. Vaginal drainage under gas or scopolamine-morphine anesthesia if pelvic abscess develops. 13. No vaginal and uterine douches. *Gillmore.* 554

Pyelonephritis in Pregnancy. TREATMENT. 1. Rest in bed. 2. Elevation of affected kidney. 3. Morphine or codeine for pain. 4. Early catharsis by calomel and salines. 5. Ice-cap to loin. 6. Cream of tartar water internally. 7. Diet: Milk, skimmed if much digestive disturbance, or lactone buttermilk. 8. Hexamethylenamine, gr. v-x (0.3-0.6 Gm.) with lithium or potassium citrate, gr. x, at three- or four- hour intervals. 9. Replace last after forty-eight hours by sodium benzoate, gr. x every two hours, until patient complains of burning in kidney region, when first combination should be resumed. 10. Potassium iodide or phenyl salicylate might also be used. 11. Argyrol (25 per cent.), 3j

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(4 c.c.), instilled into pelvis in cases persisting more than ten days. 12. In colon bacillus infections, autogenous vaccines, 30 to 50 million once a week, have been successful. 13. Induction of labor, in persistent cases late in pregnancy. 14. Nephrotomy and drainage where definite signs of surgical kidney present. *O'Connor.* Page 240

Quinsy. TREATMENT. To relieve dysphagia, place on tongue 0.3 to 0.4 Gm. (5 to 6½ grains) of dry orthoform or anesthesin powder. A few movements of deglutition, without previous admixture of saliva with the powder, will bring it in contact with affected parts. Measure also useful after operation on tonsils. *Hinsberg.* 418

Rectal Feeding. Best nutrient enema consists of milk pancreatized for twenty-four hours, with 5 per cent. of pure dextrose. *Short and Bywaters.* 555

Renal Inflammation. DIAGNOSIS. With patient sitting erect, but relaxed, lightly palpate lumbar muscles. If one kidney is seat of an inflammatory process, muscles on that side will feel firmer than normally. *Pottenger.* 418

Rheumatism, Gonorrheal. TREATMENT. Massage of joints by physician, beginning two weeks after start of disease, recommended. Effleurage alone permissible and no pain not readily tolerable should be caused. Support extremity, cover skin with petrolatum during massage, and use whole hand, to avoid localized pressure. Repeat at least once a day and keep joint in starch bandage between treatments. Commence passive movements as soon as pain so relieved that patient can stand them—in six to eight days or sooner. Massage of prostate essential for lasting results in the large proportion of cases with prostatic inflammation. Serum or vaccine to be given conjointly. *Wolf.* 547

Rheumatism, Muscular. TREATMENT. 1. Rest in bed. 2. Liberal diet of milk, eggs, light meats, farinaceous articles and cruciferous vegetables. Buttermilk and water between meals *ad libitum.* 3. General bath daily, with temperature progressively increased. 4. Massage, after pain and tenderness under control at least twenty-four hours. 5. In lumbago or other localized muscular troubles where general methods inefficient: Acupuncture or injection directly into involved muscle of 10 c.c. of ice-cold normal salt solution. 6. Where severe pain: Salicylates, at first in large hourly doses, with sodium bicarbonate. Locally, 20 per cent. salicylic acid ointment or liniment of oil of gaultheria, followed by flannel jacket or bandages, with hot-water bottles or electric pads. *Meyer.* 484

Rhus Dermatitis. TREATMENT. 1. To prevent further penetration of poison: Soap and hot water bath of whole body; discard all clothing exposed to the poison. 2. To relieve itching, water as hot as can be borne. 3. Curative remedies: Ichthyol collodion, 5 per cent., painted on lesions three times daily. Magnesium sulphate in saturated solution, applied on gauze, covered with rubber tissue and bandage. Iodine tincture, diluted with 9 parts of water. Hot 2 per cent. (or weaker) potassium permanganate solution; remove stain with 1 per cent. oxalic acid solution. 4. Where pustules have formed: Hot mercuric chloride solution. *Von Adelung.* 300

Scalp Wounds. TREATMENT. Shave scalp for some distance around wound, either dry or wet with alcohol; after area dried, paint with tincture of iodine and wash off surplus with alcohol. In suturing use figure 8 sutures, not too tight. Where parts badly torn, provide free drainage; stitches not to be too close together. In all fractures of skull give 40 to 60 grains (2.6 to 4 Gm.) of hexamethylenamine daily. *Harper.* 119

Scarlet Fever. TREATMENT. Salvarsan used in 109 cases. Striking effect on throat symptoms, especially in necrosing form, noted. Indicated in severe toxic forms especially. Good results even upon local application. Neosalvarsan not suitable. *Jochmann and Schreiber.* 364

Sciatica. TREATMENT. Good results from X-ray treatment in 11 out of 13 cases. Rays directed usually over lumbar region, sometimes over nerve itself. Small doses only. In cases resisting ordinary medical treatment and galvanic current, radiotherapy should always be tried, especially when sciatica due to compression of nerve-roots. *Delherm.* 365

Marked improvement in 2 cases after a few daily subcutaneous injections of 1 c.c. (16 minims) of 1: 1000 epinephrin solution. *Gaisböck.* 478

Where, after relief through rest in bed, pain recurs upon movements of thigh, nerve should be exposed and examined for adhesions. Very small adhesions may be removed by nerve stretching, but where large and numerous adhesions present, careful dissection with knife necessary, and offers great chance of permanent improvement. *Lewis and Taylor* 555

Septicemia. TREATMENT. Fixation abscess advised, consisting in injection of 15 minims (1 c.c.) of spirit of turpentine in cellular tissue of thigh, loin, or deltoid region. *Carles.* 413

Sinus Suppuration, Acute. TREATMENT. Apply 4 per cent. cocaine solution on cotton applicator, passed between end of middle turbinate and nasal wall. Follow by a cleansing alkaline solution and an oily spray containing menthol. To reduce pain and promote drainage: Hot, moist applications over whole face. Salicylic preparations, acetphenetidin, and quinine, to be used as indicated. Free catharsis. Irrigation of frontal or maxillary sinuses unnecessary unless there is trouble in antrum traceable to carious tooth. Vacuum treatment by negative air-pressure often useful. *Lemere.* 176

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Syphilis. TREATMENT. Following plan advised: Intravenous salvarsan injection, immediately followed by series (12 to 15) of intramuscular mercury salicylate injections, and later by 4 to 6 intramuscular injections of small doses (0.1 to 0.2 Gm.) of salvarsan in sesame oil. After this start new series of mercury salicylate injections, to be continued at increasing intervals during first year of disease. A number of the cases thus treated appeared to be cured. *Eisenstaedt.* Page 53

Salvarsan given intravenously in doses of 0.2 to 0.4 Gm., four to six times at weekly intervals, in 14 pregnant syphilitic women. Each gave birth at term to a living child, generally of normal weight, and none showing stigmata of the disease. *Jeanselme.* 299

Tabes Dorsalis. DIAGNOSIS. Spontaneous fractures not infrequently an initial or early symptom of tabes. *Taylor.* 54

Talipes Equinovarus. TREATMENT. Immediately after birth place strip of zinc oxide adhesive plaster over sole and inner aspect of foot, over correct position of latter, and draw plaster tightly along outer aspect of leg. Place second strip over sole just posterior to base of metatarsals, extending over inner aspect of foot and ending over joint of great toe. Draw firmly, apply to outer side of leg 1 to 2½ inches above external malleolus, and wrap around leg in ascending spiral. Place further strips to cover and tighten the second tension strip, beginning on leg 2 inches above ankle and overlapping until instep reached. Renew dressing, after cleansing foot with ether and alcohol, ten days or two weeks later. Deformity will be corrected in 6 or 8 weeks. Leave foot with stiff-ankle infant-shoe, with 1 strip of adhesive on outer side of foot and leg. *Allen.* 178

Tapeworm. TREATMENT. Thymol in cachets of 0.25 Gm. (4 grains) to be given in the morning on an empty stomach for eight days. Worm usually expelled on third or fourth day. Twenty-three cases treated with success. All alcohol to be stopped during treatment. *Artault.* 366

Tetanus. TREATMENT. Case in which spasms were controlled, sleep procured and feeding with milk rendered possible by repeated intravenous infusion of 15 to 30 c.c. each of ether and paraldehyde in normal saline solution. Produced prompt hypnosis, followed by relative muscular relaxation for several hours. *Atkey.* 556

Tetany. PROPHYLAXIS. In pregnant and puerperal patients and after gynecologic operations, when Chvostek's sign positive and symptoms such as paresthesia of hands, itching, pains in fingers in sewing or writing, and muscular weakness or stiffness present, give calcium chloride in following form: Calcii chloridi (puriss.), ʒv (20 Gm.); syrupi menthæ piperitæ (vel syrupi rubi idæi), ʒij (60 Gm.); aquæ destillatæ, ʒx (300 Gm.). Dose of calcium chloride to be carried as high as 75 to 90 grains (5 to 6 Gm.) a day in adults and, in newborn infants, to 15 grains (1 Gm.). *Kehrer.* 365

Tinnitus Aurium. TREATMENT. To relieve stuffiness of Eustachian tube—the most frequent cause of tinnitus—inject in it with catheter a 2 to 5 per cent. solution of dionin, using sufficient force to cause it to enter tympanic cavity. *Randall.* 491

Tonsillitis. TREATMENT. Following measures used in severe follicular tonsillitis and streptococcic sore throat: 1. Mixed streptococci vaccine subcutaneously. 2. Silver nitrate solution, gr. lxxx-f3j, applied to tonsils once or twice daily. 3. Mild antiseptic gargle, used every two hours or oftener. 4. Calomel in fractional doses, until free catharsis occurs. 5. Ice-bags, as needed. 6. Salicylates and Dover's powder, to reduce temperature and quiet pain. 7. Plenty of fluids—water, milk, lemonade. 8. Acetylsalicylic acid, locally and internally. *Goldstein.* 405

Toxemia of Pregnancy. TREATMENT. Free administration of oxygen seemed useful in a number of cases, some severe. May be given either by inhalation or subcutaneously. *Shears.* 242

Tuberculosis, Articular. TREATMENT. Thyroid substance indicated in sluggish cases, especially if evidences of thyroid inactivity present. Dose should be only ⅙ to ½ grain (0.01 to 0.03 Gm.) *pro die*, and patient watched for tachycardia. *Lereboullet.* 179

Tuberculosis, Laryngeal. TREATMENT. Submucous cauterization found to heal 70 to 85 per cent. of cases. Performed with electric cautery. Easier than curettage, and there is no bleeding. Not suited, however, for superficial ulcers on posterior wall, particularly those on the cords, which do better on the old method of lactic acid applications. *Pettit.* 237

To relieve dysphagia, place on tongue 0.3 to 0.4 Gm. (5 to 6½ grains) of dry orthoform or anesthesin powder. A few movements of deglutition, without previous admixture of saliva with the powder, cause it to descend into contact with diseased areas covering entrance to larynx, and in a few minutes patient can swallow without distress. Measure can be repeated three or four times daily for several weeks. *Hinsberg.* 418

Tuberculosis, Pulmonary. DIAGNOSIS. Value of percussion in earliest stage emphasized. With patient lying on back on couch, employ light percussion on terminal phalanx of a finger firmly pressed on spot under examination. Three characteristic dull areas on either side should be sought, which may all be present and of considerable size while apex is still very fairly resonant: 1. Opposite inner part of first intercostal space (percussing anteriorly) and inner part of suprascapular fossa (posteriorly). 2. Opposite outer part of same interspace, and outer part of suprascapular fossa. 3. In upper part of lower lobe, percussing posteriorly at end of spine of scapula, and anteriorly in second interspace. *Lees.* 54

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Quantitative examination of albumin in sputum easily made and useful in diagnosis in doubtful cases. Technique as follows: To 20 c.c. of sputum as free from saliva as possible add a 3 per cent. acetic acid solution slowly, while agitating, until mucin is coagulated; add 2 parts of distilled water to sputum, shake well, filter through several layers of gauze, add a few drops of acetic acid solution, filter, and test filtrate for albumin by any ordinary test. If more than a trace present make quantitative test with Esbach's tube and multiply reading by 3 to get percentage. All active cases give positive reaction. *Works.* Page 117

In very early infiltration of right apex, auscultation at acromial end of right clavicle yields prolonged expiratory sound, louder spoken voice, and slightly increased whispered sound. In case of incipiency of left apex, breathing under clavicle becomes markedly bronchovesicular, with increased voice and whispered sounds. Acromial auscultation in first stage tuberculosis yields signs which, found over lung tissue, would indicate absolute consolidation, *i.e.*, signs are greatly exaggerated and made evident. Acromial auscultation also reveals râles when these would be missed or indistinct over apex. *Abrahams.* 544

TREATMENT. 1. Inhalation of following solution: Creosoti, phenolis, spiritus chloroformi, ana 3ij (8 c.c.); tincturæ iodi, spiritus ætheris, ana 3j (4 c.c.). Two Yeo inhalers to be used on alternate days, cleansed by immersion in boiling water and careful drying. Patient to pour 6 to 8 drops of solution on felt of inhaler *every hour* during daytime, and once or twice during night if awake. Petrolatum or lanolin cold cream to be smeared over nostrils and upper lip before use of inhaler at first. 2. Period of rest in bed at beginning of treatment. 3. Treat digestive disturbances. 4. Give a sufficiency of easily digested food; malted milk, dissolved in scalded whole milk, after each meal. 5. Careful disinfection of mouth 4 times daily, after the milk; antiseptic sprays for unhealthy conditions of fauces. Forty-eight complete recoveries in 70 cases thus treated. *Lees.* 54

Hydrotherapeutic measures, to be employed in 4 successive stages or steps, described: I. Ablution, beginning with water at 90° F., gradually reduced, by 2° daily until 60° F. reached; followed by drying and, if possible, exercise in open air. II. Affusion. With patient standing in water at 105° F., water at 85°, gradually reduced to 60°, is thrown over back and chest. III. Cold rub. With patient standing in water at 105°, a sheet is wrung out in water at 80°, gradually reduced to 50°, and actively rubbed till sheet warm. IV. Drip sheet. Same as last, with sheet dripping; patient rubbed and slapped for two minutes; water at 70° then poured over shoulders, and friction applied till sheet warm; same procedure rapidly repeated over other parts of body. *Baruch.* 56

Olive oil, ½ ounce (15 c.c.) two hours after each meal, increased weekly by ½ ounce up to 3 ounces, found to cause considerable gain in weight. *Bram.* 47

Sodium cinnamate subcutaneous injections found superior to cacodylates in all varieties of cases in which a general tonic effect required. Initial dose, contents of 5 c.c. (1¼ drain) ampoule, including 0.5 Gm. (⅝ grain) of the cinnamate; this to be rapidly increased by one-half, bulk of solution, however, being kept the same. Injections given daily. *Laborde.* 118

Importance of hyperalimentation in cases of tuberculosis in pregnancy where it is decided not to empty uterus emphasized. Use of following mixture advised to increase appetite: Lysol, 1 part; ichthyol, 10 parts, and glycerin 20 parts. Begin with 1 drop and increase by 1 drop at each dose up to 30 drops, which is maintained. Preparation dropped into half tumblerful of water and taken just before meals. *Stewart.* 175

Four to 8 capsules, each containing 4 grains (0.25 Gm.) of liver substance, *pro die* found effective in arresting or preventing return of hemoptysis. In cases with low arterial tension and asthenia, epinephrin, 5 to 10 drops of 1:1000 solution daily for five to ten days, followed by like period of rest, or of adrenal substance, 1½ to 5 grains (0.1 to 0.3 Gm.) daily, is indicated. Bayle secures good results by administering 100 Gm. (3½ ounces) of fresh hog spleen every day. Loeper and Esmonet advise pancreatin, 2 to 4 Gm. (3ss-j) in keratin-coated capsules of 0.25 Gm. (4 grains) each, daily in first and second stage cases, and especially in patients with involvement of serous membranes; improves appetite and general condition. *Lereboullet.* 179

Sluggish, afebrile cases of tuberculosis, especially with profuse expectoration, are often greatly benefited by creosote. *Fishberg.* 180

Addition of tuberculin to sanatorium treatment found to increase chances of clearing sputum of tubercle bacilli by about 17 per cent. in early and moderately advanced cases. *Bardswell.* 363

Treatment of cough in phthisis described: (1) For nervous cough: Swabbing throat with 30 per cent. potassium bromide solution, or taking 15 grains (1 Gm.) of this salt in water. (2) For pharyngeal cough: Gargling with betanaphtholis, gr. iij (0.2 Gm.); sodii boratis, ʒss (15 Gm.); aquæ menthæ piperitæ, 3vij (24 c.c.); aquæ, q. s. ad 3xxxv (140 c.c.). If inflammation present, pharynx to be swabbed with: Cocaine hydrochloridi, gr. ij (0.12 Gm.); resorcinolis, gr. xv (1 Gm.); glycerini, ʒj (30 c.c.). Following gargle also useful: Sodii salicylatis, 3vj (24 Gm.); antipyrinæ, 3j (4 Gm.); aquæ laurocerasi, aquæ aurantii florum, ää 3ss (2 c.c.); glycerini, ʒiiss (75 c.c.); aquæ destillatæ, q. s. ad 3xxxv (140 c.c.). (3) For laryngeal cough: Orthoform powder or a solution of balsam of Peru; fol-

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lowing draught: Tincturæ bryoniæ ♏x (0.6 c.c.); tincturæ aconiti, ♏xx (0.2 c.c.); tincturæ belladonnæ foliorum, ♏x (0.6 c.c.); syrupi opii, ℥j; aquæ, ℥iv; one teaspoonful every two hours. (4) For tracheal cough: Terpini hydratis; pulveris ipecacuanhæ et opii, āā gr. ij; to be taken in cachet two or three times a day. (5) For gastric cough, 2 drops of opium tincture or 1/6 grain (0.01 Gm.) of codeine ten minutes before each meal. *Robin.* Page 363

Following formula recommended: Guaiacolis puri, gr. xxx-xl; quininæ hydrochloridi, gr. xx-xxv; alcoholis, ℥ij; tincturæ gentianæ compositæ, ℥iij; aquæ, q. s. ad ℥viij. Half-teaspoonful gradually increased to 2 teaspoonfuls to be given, well diluted, three times daily after meals. Guaiacol carbonate then gradually added to increase amount of guaiacol taken. Tuberculin (T. R.) also to be administered, beginning with 1/100000 to 1/80000 mgm., then doubling dose every four days if no fever followed previous dose. *Voight.* 554

Tuberculosis, Surgical. TREATMENT. Use of "injectio trypsini" recommended for tuberculous abscesses of all kinds, synovial hydromata, sinuses, arthritis, etc. After an insignificant local reaction, pain, tenderness, and tubercle bacilli disappear, pus becomes more fluid and undergoes absorption, and healthy tissues proliferate. Dilute the preparation as supplied with 2 to 10 parts of sterile saline solution, inject strictly subcutaneously 1 c.c. (of pure preparation), and distribute beneath skin by gentle massage, one to three times a week. Where abscesses, puncture with trocar and inject; where sinuses, inject into surrounding tissues in several places; where ulcers, under their bases; where synovial hydromata, into the sheath, and where tuberculosis of joints, in part directly into joint, partly into surrounding tissues. Undiluted injection used in the joint cases. *Baetzner.* 301

Typhoid Fever. DIAGNOSIS. Modified Russo test recommended: Place in a test-tube enough of a just translucent aqueous solution of methylene blue to extend just above the bowel. Then fill tube with urine and, after mixing, examine color against good daylight. Emerald or mint green indicates positive reaction; any tinge of blue renders it negative. Urines containing bile or blood not suitable for test, and those clouded by phosphates, urates, etc., should be filtered. Test is constantly positive in typhoid and but rarely in other conditions; negative reaction is good evidence of absence of typhoid. Appears early in the disease. *Neuman and Behrend.* 429

TREATMENT. Olive oil considered very useful as a food in 1- to 3- ounce (30 to 90 c.c.) doses 3 times daily. Also useful as a laxative; high injections of lukewarm oil may be given. *Bram.* 47

Collective statistics as to results of use of typhoid vaccines show 423 cases, with only 5.4 per cent. deaths. Dosage used by author: Initial hypodermic injection of 500,000,000, repeated at four-day intervals as long as required, and increased by 100,000,000 each time. Stock-vaccine injections made just under skin over insertion of deltoid or over tensor vaginæ femoris. *Callison.* 57

Series of 65 cases treated without milk, on diet consisting of broths, soups, gruels, gelatin, eggs, sugar of milk and butter. Gelatin given almost ad libitum—6 ounces of 5 per cent. solution, flavored with lemon, vanilla, etc., five times daily. Mortality low, persistent diarrhea only in 4 cases, hemorrhage in 4 and perforation in none. *Johnson and Watt.* 181

Iodine, in aqueous solution or as tincture—the latter in doses of 15 to 25 drops daily in a mixture of cinchona and malaga wines or in milk—given in 44 cases. Cases with profuse diarrhea, distention or nausea appeared to improve, rapid recovery usually occurred, and mortality seemed to be lowered. *Arnozan and Carles.* 304

Ulcers. TREATMENT. Value of dry treatment of wounds, burns and ulcers emphasized. Keeping a leg ulcer exposed to air, lightly dusted with aristol and stearate of zinc, is an effective treatment. Patient should lie down, elevate leg and protect it from flies and dust with thin layer of gauze. *Pitfield.* 285

In chronic leg ulcers, wash affected surface and surrounding area with 90 per cent. alcohol, and apply following ointment on sterile gauze, with firm bandage from foot to knee: Acidi borici, ℥ij (8 Gm.); adipis lanæ, petrolati, ana ℥ij (60 Gm.). Repeat washing with alcohol next day, give whole leg massage with alcohol and stiff brush, and reapply ointment. After a few days, scrape base and edges of ulcer clean. Use the wool-fat ointment for two or three weeks, then 5 to 10 per cent. thymol iodide in cold cream. Continue alcohol treatment, and cauterize granulations with silver nitrate if necessary. *Wade.* 356

Urethritis, Gonococcal. TREATMENT. Fluidextract of aconite recommended for relief of congestion and irritation; 1 minim every one or two hours for intelligent patients and every three or four hours for unintelligent. Interval to be doubled as soon as tingling, perspiration and a feeling of relaxation appear. *Pedersen.* 305

Anesthesia of urethral mucous membrane can be completely and satisfactorily produced by 1: 2500 or 1: 5000 potassium permanganate solution. Found useful to reduce sensitiveness before passing sounds in stricture. *Barton.* 557

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Urticaria. TREATMENT. Epinephrin given subcutaneously in doses of 8 minims (0.5 c.c.) in 6 cases. Two doses always caused complete fading of rash and cessation of itching in ten to twenty minutes. Recurrence probable in an hour or two unless treatment continued. *Swann.* Page 164

Vaccinal Ulcers. TREATMENT. Constant application of antistreptococcic serum as a wet dressing, covered with oiled silk, to indolent ulcers resulting from extraneous infection of vaccination site, recommended. Remove oiled silk and remoisten dressing, without disturbing it, three or four times daily. *Sexton.* 492

Vincent's Angina. TREATMENT. In mild cases, best results from use of trichloracetic acid. Membrane first removed by hydrogen peroxide and wiping with cotton swab; ulcer then anesthetized with 10 per cent. cocaine solution, and trichloracetic acid applied a few minutes after. Usually 3 or 4 applications at 2- or 3- day intervals necessary. Tincture of iodine preferable where ulceration extensive. For pain, orthoform. Carious teeth to be cared for. General condition also to be improved. *Halstead.* 58

Vomiting. TREATMENT. In a number of instances vomiting can be immediately arrested by means of the pyloric reflex of dilatation, which consists of pressure or concussion of the fifth dorsal spine. *Abrams.* 394

Vomiting of Pregnancy, Pernicious. TREATMENT. Sodium bicarbonate, 5 to 50 grains (0.3 to 3 Gm.) a day, recommended. Part of it often vomited, but some retained. Continue for a week after vomiting stopped. Bowels to be well cleared by colonic flushing. Veronal also found useful. *Lyon.* 59

Whooping-cough. TREATMENT. Pertussis bacterin used in 40 cases. Disease not shortened, but bacterin causes, after preliminary slight aggravation, well-marked, and sometimes remarkable, symptomatic improvement in a certain proportion of cases. Best results produced at the height of the disease. Give 2 or 3 full doses—20 to 50 million bacteria each—at five-day intervals. In young infants moderate doses should be given early; they diminish severity of disease and minimize complications. *Zahorsky.* 48

Pertussis vaccine used in 17 cases. Best dose found to be 40 million bacteria, given in buttocks even to an infant twice a week, or in severe cases in old children, 3 times a week for one week only. If much benefit noted, intervals prolonged, and vice versa. Many cases improved after single dose. No reaction from injections, local or general. Vaccine should be used only in undoubted cases of the disease. The younger the infant, the more rapid the cure. *Scott.* 174

1. Following preparation recommended: Ichthyolis, ʒiiss (10 Gm.); glycerini, ʒss (15 Gm.); liquoris calcis, ʒiiss (10 Gm.); olei amygdalæ amaræ, gtt. iij; olei anisi vel menthæ piperitæ, gtt. x; syrupi, q. s. ad ʒiiiss (100 Gm.). Dose in children up to 1 year of age, 4 to 6 teaspoonfuls; up to 2 years, 3 to 4 dessertspoonfuls; 3 to 4 years, 4 to 5 dessertspoonfuls; 5 years and upward, 4 to 5 tablespoonfuls. These doses can be exceeded in obstinate or long-standing cases, or those complicated with capillary bronchitis or bronchopneumonia. 2. As adjuvant in young children: Instillations of weakly mentholated oil in nose. 3. Emetic and purge at beginning of treatment. 4. If bronchopulmonary complications should appear: Mustard baths and antiseptic inhalations. 5. Where hemoptysis: Inject diphtheria antitoxin and, this failing, hepatic extract. *Naamé.* 306

Wounds. TREATMENT. Treat all wounds on which great force has been exerted, and especially those contaminated by soil and dirt-covered objects, as if infected with gas bacilli. Leave open where possible and irrigate thoroughly with peroxide. Bandage lightly, if at all. Inspect frequently and irrigate often. On first sign or symptom of infection, take smear and examine for *B. aërogenes capsulatus.* Open wound freely, if sutured, and if on limb place latter in bath or irrigate continuously. If condition extensive, expose field widely to air by free incisions. (Do not employ peroxide in full strength or inject in confined spaces or directly under tissues.) *Cramp.* 42

Wounds of face and hands should be closed with subcuticular stitches, especially in women. To prevent subsequent stretching of scar, close superficial fascia with interrupted fine silk sutures before applying subcuticular stitches. After injuries to soft parts of hand, cleanse quickly by immersing in gasolene; after latter has evaporated, sterilize parts with tincture of iodine and alcohol. *Harper.* 119

Application, in gunshot wounds, of steaming towels wrung out in water as hot as can be borne, during thirty minutes night and morning before wound is dressed, recommended. To be continued till all inflammation subsides. *Griffith.* 110

Use of paste made by adding a few drops of mercury bichloride and ammonium chloride solution (1:2000) to small quantity of zinc oxide recommended for slight wounds, abrasions, injection punctures, indolent ulcers, sores about the face, etc. Where much stinging and itching about abrasions, substitute 2 per cent. phenol for bichloride. *Hiden.* 182

Scarlet red ointment, 2 to 4 per cent., advised for acceleration of healing in granulating postaural operative wounds, after radical removal of rodent ulcers, etc. *Allan.* 359

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CORRESPONDENCE.

TREATMENT OF ALCOHOLISM.

215 Braley Bldg.,
KANSAS CITY, MO., Sept. 8, 1913.

To the Editor of the Monthly Cyclopedia and Medical Bulletin:—

DEAR SIR:—What was claimed as the old Keeley treatment for alcoholism with some additions has proven successful in my experience. I first give the patient a full dose of compound cathartic pills at bedtime, and the next afternoon a saline in hot water. He should then be given the Keeley prescription, which is as follows:—

℞ Auri et sodii chloridi	gr. xv.
Strychninæ nitratis	gr. iss.
Atropinæ sulphatis	gr. ⅛.
Ammonii chloridi	gr. viij.
Hydrastinæ	gr. ij.
Glycerini	fʒiss.
Fluidextracti cinchonæ,	
Fluidextracti gentianæ,	āā fʒss.
Fluidextracti cocæ	fʒij.
Aquæ	q. s. ad fʒiv.

M. Sig.: Give a teaspoonful at 7 and 11 A.M., 3 and 7 P.M., and, if restless, a dose at 1 A.M. Continue this as long as there is a desire for strong drink.

The patient should sip cold water for the thirst. Toward the latter part of the treatment, when the patient has ceased caring for drink, commence giving a daily dose of sterilized water hypodermically, telling him that in a few days he will be unable to take a drink without its making him sick. When you think the proper time has arrived, give him ⅟₂₀ grain of apomorphine. As soon as you have given it, and before the medicine has had time to act, give him a drink of whisky. The resulting nausea he will believe to be caused by the whisky, and for a long time the very smell of whisky will make him sick. In fact, it is well to encourage this idea, and also to assert that his drinking within a year or so might prove serious. These little deceptions are justified. During the treatment, should the patient become very nervous, somnos can be administered with good results. For several days after giving the apomorphine let the patient get a good smell of the whisky; but do not encourage or in fact permit him to take another drink unless you prepare him with the same dose of apomorphine. When the first dose of apomorphine has been given and its nauseating effect produced, the patient should be told that a cure has been effected—that that was the point to be attained. The full significance of this will be appreciated, and its psychic effect of great benefit.

H. S. JONES, M.D.

Book Reviews

APPENDICITIS. By John B. Deaver, M.D., Sc.D., LL.D., Professor of the Practice of Surgery, University of Pennsylvania; Surgeon-in-Chief to the German Hospital; Visiting Surgeon to the Hospital of the University of Pennsylvania, Philadelphia. Fourth Edition, Octavo of 379 Pages, with 14 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1913. Cloth, $4.00, net.

The fourth edition of this convenient work requires but little more than mere mention of its appearance, in view of the wide circulation of its previous issues. The new features of the book include matter concerning recent advances in the treatment of peritonitis—of

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appendicular origin in particular,—the more recently acquired knowledge concerning chronic appendicitis and its various obscure clinical manifestations; further discussion of the significance of the leucocyte count and differential formula, and reference to Lane's bands, Jackson's membrane, and the mobile cecum, recently invoked in rapid succession to account for symptoms commonly ascribed to chronic appendicitis and which sometimes are not abolished by removal of the appendix. The chapter on pathology has been brought up to date and a more complete discussion of carcinoma of the appendix given. As before, the book begins with an interesting historical section. Special chapters are devoted to the clinical etiology of appendicitis, appendicitis in children, typhoid appendicitis, the blood in appendicitis, and its complications and sequels, in addition to the customary sections on anatomy, pathology, symptoms, diagnosis, prognosis, and treatment. In regard to the latter subject the author asserts that "in every case of appendicitis seen early operation is indicated regardless of the mildness of the attack, and regardless of the severity of the attack." Procrastination with the idea of performing an "interval operation" is strongly condemned. Advice is given concerning the medical treatment of cases in which, for any reason, operation cannot be practised or is contraindicated. The surgical treatment and after-treatment are discussed at length. As before, the book should prove of great utility to the practitioner in that it presents clearly and concisely the attitude toward the management of appendicitis of a surgeon of wide experience.

THE LABYRINTH. An Aid to the Study of Inflammations of the Internal Ear. By Alfred Braun, M.D., and Isidore Friesner, M.D., New York. Octavo of 250 Pages, with 50 Figures in the Text and 34 Half-tones on 32 Plates. New York: Rebman Company, 1913. Cloth, $4.00, net.

This book is presented by the authors as a collective exposition of the fundamental facts regarding labyrinthine disease that have thus far been established, recognizing that our knowledge of this subject is still in the developmental stage and can only be considered a groundwork upon which to base further studies. Under these circumstances it is but natural that conflicting hypotheses as yet alone exist in regard to certain aspects of the subject; where this is the case the authors have, to avoid confusion, confined themselves to a description of those hypotheses which appear most plausible to them. The volume is divided into five chapters, dealing, respectively, with the anatomy of the internal ear and functionally related parts, its physiology, the methods of clinical examination, the pathology of the several types of labyrinthitis, the symptomatology of the latter, and finally the treatment. The anatomy is discussed with great thoroughness and both this section and that on pathology are profusely illustrated with original plates and diagrams. About 60 pages are devoted to methods of examination, a lucid description, with numerous diagrams, being given of the rotation test, followed by consideration of the caloric test, galvanic test, fistula test, reaction movements, etc. In the symptomatology distinction is made between circumscribed labyrinthitis, diffuse serous labyrinthitis, and diffuse suppurative labyrinthitis. In setting forth the treatment, the authors lay it down as a general rule that in the circumscribed form operative intervention is not indicated, unless the condition occurs in the course of acute middle-ear suppuration, when a simple mastoid operation is usually sufficient. The various operations practised in diffuse labyrinthitis are described and illustrated. The work closes with a bibliography and index. It can be recommended as a good, comprehensive monograph on the subject of which it treats.

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The General Field

Conducted by A. G. CRANDALL

The Catalog of Millionaires

The new catalog of millionaires which is reported to have been compiled in anticipation of the Income Tax will no doubt have quite a circulation abroad.

While the facility with which an impecunious count can secure an American heiress has been a source of constant amazement, and the heiress-snaring industry has been carried on in an eminently successful manner, there is nothing like system, and with a complete catalog of millionaires of the United States these enterprises ought to take on a boom.

It might not be unreasonable to hope, however, that there will not be many instances where a bride's family hastens the wedding preparations in order that the happy bridegroom may be able to make a hurried exit out of the country to avoid complications on account of the Mann act, as is reported recently from a Western State.

Modern Ingratitude

Ingratitude is said to be the basest of crimes, and perhaps no class of people are in a better position to appreciate this fact than the physician.

In one of his books first published about 1865, Francis Parkman, the historian, refers, in an introductory note, to the physical difficulties under which he labored in completing his manuscript, stating that owing to the condition of his eyes he was only able to work a few minutes at a time.

The probability is that had Parkman lived in these times he would have been able to secure the services of an oculist sufficiently expert to have largely, if not entirely, relieved him from the eye-strain under which he evidently labored. In fact, the ill-health which pursued Parkman during the greater part of his life may easily have been occasioned by eye-strain.

By a singular perversity of human nature, notwithstanding the wonderful advances in the science of medicine during the past fifty years—advances which have contributed enormously to the longevity and general comforts of the human race—there is no question that the doctor was much more highly appreciated a half-century ago than at present. Criticism of the medical man is now one of the most common characteristics of the lay public.

With the problem novel now becoming the favorite method of educating the dear people on certain medical topics, notably social diseases and their consequences, it might not be a disadvantage if some physician, gifted with literary instinct, were to write a book bringing out in contrast the crudities of medical practice during an era when the doctor was everywhere regarded as an oracle of wisdom, as compared with the prompt relief now afforded a patient by the competent modern physician in many conditions which unchecked may lead to lifelong disability.

The Vanity of the Degenerate

The degenerate who has committed some shocking crime is usually afflicted with enormous vanity, and, strange enough, the police officials always seem to cater to this vanity.

The Schmidt case in New York is a particularly glaring instance of this

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kind. That a confessed murderer, who obviously made his confession with the intention of raising a question as to his sanity, should have the unique distinction of a trial by a jury composed of millionaires, naturally produces a peculiar impression on the public.

There is no doubt that the notoriety attached to such cases has an unfavorable effect on certain weak-minded people or that these sensational reports produce a bad influence.

Publicity may have in some instances a deterring influence on crime, but the fact that one report of a peculiar crime is almost invariably followed by others of a similar nature, indicates that among certain people of a low order of intelligence the imitative faculties are abnormally developed. A Schmidt case is, of course, good for an enormous amount of newspaper copy, but that does not justify the exploitation of the horrible details if such reports exert an unfavorable influence upon the unstable mentality.

Some time the evident good sense of disposing of these unfortunates in such a way as not to stir up a desire among others to imitate these crimes will have become sufficiently apparent to change the judicial procedure in such cases.

Whale Oil for Automobiles

American invention has solved so many problems that it is natural to expect the early discovery of a substitute for gasoline. Owing to the handicap of limited capital, the Oil Trust is unable to provide equipment sufficient to turn out gasoline in quantities that will supply the demand. So they are hoping to discourage extravagance among automobile enthusiasts by boosting the price of gasoline to a figure which will lead to greater economy in wearing out tires. For many years the Oil Trust has been actuated by just such philanthropic motives.

Owing to the obtuseness of a stubborn and stiffnecked generation a multitude of autoists persist in ascribing to other motives the steadily increasing cost of "gas" and would eagerly seek a substitute to drive their engines.

Who knows but what some formula could be invented that would make whale oil adequately serve the purpose! There is no Whale Trust. The whale is a free lance who fears naught but the whaleman's harpoon. He roves all the way from the frozen seas to Atlantic City, New Jersey. He thrives in a climate that proved very unhealthy for Dr. Cook, and the total number of barrels of oil he contains would astonish even a temperance lecturer, well accustomed as he is to statistics.

A new invention is sadly needed.

The Wastefulness of Nature

People who, with evident great lack of enthusiasm, pay from $1 to $1.50 per thousand for gas consumed in their residences will hear with a pang of the "wild" gas well in Louisiana which is reported to have for six years caused a daily waste of from 15,000,000 to 20,000,000 cubic feet of gas. This wild gas well has at last been plugged.

Jack London in his "Before Adam" describes conditions of the human race at a time when men were accustomed to racing through the tree-tops because of the predatory animals on the ground which made ordinary pedestrianism extremely unsafe. We have made quite some progress since then to be sure, but we have not yet succeeded in preventing the Mississippi from going on a rampage, and it has taken six years to plug up this gas well.

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Mankind has accomplished a good deal, but there is a considerable number of problems to be solved besides aviation. While we have been getting the upper hand of nature in certain ways, we have developed among ourselves a large assortment of disease germs which will have to be eliminated from our scheme of life before we can sit down to enjoy other things. Altogether it looks as though a good many generations of civilized men would be required to get the business of living an ordinary life thoroughly systematized.

Another Pure Food Label Required

A paternal government having decreed that the constituents of a large number of medicinal and other substances shall be clearly set forth upon a printed label, a great sense of security has seized upon a considerable number of people.

There is one article of commerce, however, for which no such safeguard has been required, viz., ice-cream. The component parts of a considerable amount of ice-cream served to the public are veiled in mystery; especially is this the case where the customers are school-children.

It certainly seems inconsistent to require the manufacturers of various chemicals, used for sanitary purposes for example, clearly to set forth the various ingredients in a label, and allow irresponsible venders of ice-cream to market their products with little or no restriction. It would probably be somewhat embarrassing to many quite respectable ice-cream manufacturers if the percentage of cornstarch, skimmed milk or lard was to be published for the benefit of the customer. It is also quite probable that there would be a considerable diminution in the demand for this article of food immediately following. Ice-cream is not, generally speaking, an article of interstate commerce; therefore it does not come under its natural provisions, but there is little doubt that in the average legislature a great deal of time is devoted to discussing problems of much less public interest than the regulation of the manufacture and sale of ice-cream.

Individual Responsibility

In its censure of the New Haven Railroad the Interstate Commerce Commission has undoubtedly pleased the operating employés of that system, placing as it does the responsibility upon the managing directors and heads of departments.

Such a decision bears upon its face the stamp of plausibility; and did it relate to the management of a department store or some other enterprise in which human safety did not figure so actively, it might easily stand as sound and logical.

There is no doubt that much of the censure heaped upon this long-suffering railroad system has been deserved, yet any ruling or theory for the conduct of a railroad which in any way belittles the personal responsibility of those who conduct the fast trains operated by that road certainly cannot be regarded as in the public interest.

The best management in the world cannot prevent accidents if the conductors and engineers are reckless and unprincipled men, and any such employé who rushes unheedingly past signals and safety devices is taking chances of manslaughter and is a menace to the public welfare.

Quite likely all this is implied in the report above cited; but however much blame may be consistently charged to

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the management, nothing should be done in any direction to relieve train crews from the burden of responsibility which they assume in running fast trains.

When the Doctor Deserves Sympathy

There are few physicians who do not assess themselves systematically with a certain amount of professional work for which they expect no financial return. The charity account of the medical profession, if the facts could be collated, would be something astonishing.

It is only fair and reasonable that there should be as a perquisite to such physicians a certain amount of practice in which the degree of responsibility is very slight and the financial returns eminently satisfactory.

Women of abundant means and consequent leisure are quite prone to consult the family physician on comparatively trivial excuse, chiefly through their desire to retain their youthfulness as long as possible. This is an entirely legitimate field of practice for the family physician and is easy and very profitable, but unfortunately it sometimes leads to domestic complication. The doctor's wife is not always the superior in personal appearance to all his women patients, and if there is the unfortunate combination of a very moderate degree of good looks combined with jealous disposition, so much the worse for the doctor. In a great majority of cases domestic unhappiness in the doctor's household is caused by jealousy. Therefore, it clearly behooves the doctor to exercise the utmost limit of discretion should he acquire a reputation as medical advisor to society. Fortunately it is only the very exceptional doctor's wife who is foolish enough to allow herself to be swayed by such sentiment.

Fighting Vivisection

Several well-known physicians of Philadelphia have been indicted by the Grand Jury as a result of the efforts of antivivisectionists. The claim is made that these physicians permitted a system to exist by which dogs and other animals which had been made the subject of experiment were subsequently ill-treated and neglected.

There are, of course, plenty of counterclaims to the effect that the prosecution is malicious, and altogether the facts are somewhat veiled in mystery.

The antis have made their attack more reasonable and logical by not assuming that all vivisection methods are unnecessary, and basing their case on needless cruelty.

The result of a trial, if it ever comes to a trial, will be of interest, of course, to a large number of experimenters.

There is a great number of people who resent any act of apparent inhumanity which may be manifested against dogs. Dog lovers are very numerous, and it often happens that the more no-account the dog may be the more affection he seems capable of inspiring.

It would be good policy, for those who teach anatomy and certain branches of surgery which make the use of animals for experimental purposes necessary, to exercise a reasonable amount of diplomacy in caring for these animals after they have been utilized. Carelessness and negligence in this way are not excusable, no matter how useful the purpose of the experiment may be.

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Original Articles

THE MEDICAL TREATMENT OF CHOLELITHIASIS.*

BY H. B. ANDERSON, M.D., L.R.C.P. (Lond.), M.R.C.S. (Eng.),
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TORONTO, CANADA.

ONE need scarcely apologize for bringing before a society of this kind the treatment of a condition so common and important as cholelithiasis, considering the wide diversity of opinion which still exists among competent authorities as to the best procedure in certain phases of the disease. No one questions the wide field which surgery occupies in the treatment of cholelithiasis, nor the excellent results which in many cases can be obtained only by surgical means.

The question rather has been raised as to whether there is any efficient medical treatment for any stage of the condition, or if the diagnosis of cholelithiasis carries with it in every case the responsibility on the part of the medical attendant of advising early recourse to surgical measures. Curiously enough, physicians have been among those who have taken the most extreme position in advocating early operation. Thus Billings says, "Gall-stone disease must be recognized as a surgical disease, and, in view of the many possible consequences, the most conservative physician may well hesitate to take the responsibility of non-surgical treatment." Dieulafoy, entirely dismissing medical measures, states that "When once the diagnosis of calculous cholecystitis has been made, recourse must be had to surgical intervention."

When physicians are such strong advocates of operative procedure, one is more readily prepared for the opinion expressed by Bland-Sutton, that "The best and wisest physicians are those who point out to their patients that surgical assistance constitutes the best remedy," or that of W. J. Mayo, who says, "Whilst it cannot be denied that temporary palliation can be procured by

* Read at the Fourteenth Annual Meeting of The American Therapeutic Society, held in Washington, D. C., May 5 and 6, 1913.

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non-operative measures, the cure of the patient can only be brought about by surgical means." Sir Berkeley Moynihan is no less emphatic: "I hold that when once a diagnosis of gall-stones has been made, operation is always indicated unless there are grave reasons forbidding resort to surgery. Reasons should not be asked for, to support a plea for operation, but in order to justify any other course. For surgical treatment—all things considered—is far safer than medical treatment: it is *curative,* not *palliative:* its results are *permanent,* and not *temporary.*" On the other hand, Kehr, a surgeon of the widest experience in this disease, with a record of nearly 2000 operative cases, and one to whom we owe much of our present knowledge of cholelithiasis, in an address before the Berliner medizinische Gesellschaft, affirmed that in at least 80 per cent. of all cases of cholelithiasis "medical measures alone will suffice," basing his opinion not only on his own observations, but also on the results of the extensive investigations of Aschoff and Baemeister into the pathology of the disease.

When so wide a divergence of opinion exists among eminent authorities, where in the mean time may one look for the safest guidance as to the course to advise in a particular case? The position taken by Mayo Robson, that "Medical treatment must be tried fully before surgical measures are resorted to, but if after a fair trial medical means fail, surgical treatment should be adopted before serious complications supervene, and before the patient is reduced by jaundice, suppuration, or other untoward manifestations," appears, so far as one can judge from recently expressed opinions, to represent pretty accurately the views of the majority of internists in different countries, and I believe is most nearly in accordance with recent investigations and clinical experience.

It must be recognized, even by those accepting the most extreme views as to the general advisability of surgical treatment, that the latter is impossible of application in many cases owing to the patient's physical condition, and that therefore in such cases the only hope of relief is in medical measures. In this connection one need only recall advanced arteriosclerosis, cardiac disease, renal disease, and diabetes; and when one considers that cholelithiasis is especially a disease of advancing age, it is obvious that many of the cases fall into the class in which, for this reason, operation is precluded. It would, therefore, be unfortunate for us to take an unwarrantably pessimistic view of the only measures available in many cases.

It cannot be denied that during the last few years the tendency in Great Britain and America, influenced by the experience and teaching of many eminent surgeons, has been to regard all cases of cholelithiasis, with the exception of those in which some definite contraindication is present, as calling for operation. It is equally true, however, that most physicians and surgeons alike have receded from the position which formerly attached so much importance to the mere mechanical presence of gall-stones. Following the teaching of Naunyn, Kehr, Aschoff, and other German investigators, a much broader view of the whole pathological process is being taken, in which the formation of gall-stones is regarded as a mere incident of a disease in which ***bile-stasis,***

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infection, and *more or less widespread inflammatory manifestations* are of *primary* importance, and against which treatment, whether medical or surgical, must be directed. Attention is being directed more to *biliary stasis, infection,* and *inflammatory manifestations,* rather than focused on the *secondary* result—the calculi. Kehr considers the calculi in inflammation of the biliary passages in the same light as the fecolith in appendicitis—a product of the inflammation. Since Aschoff has shown that *non-inflammatory cholesterin calculi* may occur, due to bile-stasis and certain metabolic disturbances, as in pregnancy, Naunyn's view as to the *invariable* presence of infection is no longer tenable on pathological grounds, though clinically the fact remains that these cases are unimportant so long as no infection occurs.

All these authorities believe that medical measures may be effective in relieving the inflammatory trouble in many instances, and in producing a virtual cure. Physicians have long since abandoned the attempt to dissolve gall-stones as a primary object of treatment, and surgeons are realizing that the mere removal of gall-stones by operation does not constitute a cure. The idea of *stasis, infection,* and *inflammation* is dominating therapeutic aims. This being the case, medical and surgical treatments are no longer opposed, but rather complementary to one another. In cases where good drainage can be secured, so that stasis, inflammation, and infection are relieved without operation, and the patient remains free from symptoms, this is accepted as evidence of the absence of serious local irritation by the gall-stones. If by reason of the mechanical effects of the gall-stones, or for other cause, the symptoms of infection do not subside, then operation is indicated for its relief. Kehr's statistics show that the results of operation at this time are almost as good as in early operation.

The belief that gall-stones might be dissolved was long held by many physicians. Naunyn thought this might occur in rare instances. This view has been largely discarded, but some recent investigations by Hansemann have reopened the question. He has apparently proved by experiments *in vitro,* and by transferring gall-stones from human beings to dogs, that gall-stones are soluble in normal bile, particularly stones composed largely of cholesterin. He believes, therefore, that if by treatment the catarrhal conditions of the bile-passages can be cured, inflammatory products removed, and the bile restored to its normal condition, the stones will be dissolved spontaneously. Treatment, according to him, should be undertaken with this aim in view, rather than with a view to direct action on the gall-stones. The article is accompanied by a number of illustrations, showing sets of gall-stones in various stages of being dissolved, the research reported establishing once more that normal bile under normal conditions does not permit concrements to develop, and will dissolve in time those already formed. The peculiar shape of the gall-stones found at operation in many cases is due to their being partly dissolved. Hansemann's work, if confirmed, will obviously have an important bearing on treatment.

The quiescence or latency of gall-stones in any case is now denied by some advocates of early operation, who believe that, if *clinically* quiescent, gall-stones are *pathologically* active. Convincing data, however, have not been brought

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forward to establish their views, which seem based largely upon personal opinion. Apart from the question whether gall-stones may or may not be dissolved, so long as the teaching, based on autopsy records and clinical experience, was accepted that in over 90 per cent. of all cases they remained latent, medical treatment had a safe objective point. If the infection, bile-stasis, and attendant inflammation could be removed, and the stones remained merely as innocuous occupants of the gall-bladder, then a natural tendency to a *virtual* cure was indicated. If, therefore, in a given case, this latent condition could be brought about and maintained, both the physician and the patient were satisfied with the results. It must be admitted that in many cases formerly regarded as latent, fuller knowledge and improved diagnostic technique will now recognize gall-stones as the underlying cause of digestive disturbance, flatulency, etc. We are greatly indebted to surgery for this knowledge, but it has not established the view that gall-stones are never latent.

It may appear almost presumption for a physician, with an experience necessarily limited as compared with that of many surgeons, to obtrude his observations and opinions upon the question of quiescence, but it is apparent that there is no plan of medical treatment with such claims to superiority that it will attract large numbers of patients to any individual physician or clinic, as flock to certain surgical clinics. It follows, therefore, that if experience with the largest number of cases alone is to be the criterion of authority, then the decision must be left to the surgeons. A collective investigation of the results of medical treatment in a large number of cases would be of much value, however, in arriving at a conclusion as to the permanency of relief afforded by medical treatment.

Apart from his experience with larger numbers of cases and the opportunity of seeing the pathological conditions at operation, the advantages of observation are not all on the side of the surgeon. The physician is usually able to follow his cases over a longer period, and oftener has a better opportunity to study, not only the initiation of disease, but ultimate results. The surgeon, moreover, deals with the more severe cases, those which have resisted medical treatment; in other words, the class of cases which all are agreed properly belong to the domain of surgery. His experience being with more severe, more resistant and complicated cases, he naturally takes a more serious view of the disease, and thus of the *hopelessness* of relief other than surgical. Dealing only with surgical measures, he is not in a position to estimate as fully the value of non-operative treatment as the physician who has seen even a limited number of cures without operation.

While accepting the data supplied so abundantly by the surgical clinics, one may properly question if the broad generalizations sometimes made therefrom are in accordance with established facts. The teaching of Naunyn, Kehr, Aschoff, and others, as before mentioned, that stagnation of the bile and infection are the chief underlying factors in the development of cholelithiasis, is now generally accepted. Obesity, pregnancy, ptosis of the viscera, fecal stasis, infections in the portal area, and metabolic disturbances, are well-recognized contributory causes. Gall-stones are the ***results*** of these factors, and not the

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primary cause of the disease. If the basis of rational treatment be the removal of the cause of the trouble, are we warranted in concluding that a cure has been effected when the removal of these causes is only *incidental to,* and *not the main object of treatment?* Gerster, in studying the causes of failure after operation, has recently directed the attention of his surgical colleagues to the advisability of a more careful consideration of the teaching of Naunyn.

The specter of danger from the development of serious, perhaps irremediable, complications from delayed operation is usually raised by the surgeon, his views naturally being based on the class of cases coming to him for relief. But it will scarcely be argued that his experience represents the average of those who have to deal with cases of all degrees of severity, from the mild or latent to the most serious. In proportion to the general incidence of gall-stones in from 5 to 10 per cent. of autopsies, the occurrence of many of the most serious complications, such as cancer, gangrenous cholecystitis, gall-stone ileus, etc., is so infrequent that the danger of their development in a given case is too remote to constitute *in itself* a reason for operation as a *general procedure.* Is it correct to assume that recourse to early operation would appreciably reduce the general mortality by forestalling these rarer complications, when in the majority of all cases gall-stones are latent, or at least do not produce symptoms sufficiently definite to permit of a diagnosis, and especially when the course of the disease will give timely warning in most of the diagnosable cases and direct them to the surgeon? I believe that many clinicians will agree with Kehr, that it is fortunate that we are unable, by the X-rays or other means, to recognize the quiescent cases, if the presence of gall-stones *per se* is to be taken as an indication for their removal.

But again, it is claimed that operative cures are permanent, whereas medical cures are merely palliative. This statement is scarcely in accord with our knowledge of the pathology of the disease or our clinical experience. After operations the bile-stasis, infection and inflammatory changes must subside, and the underlying causative factors be removed, before the patient can be regarded as cured. If the gall-bladder is not removed, and if the causes underlying the original infection which produced the gall-stones remain or recur, on what grounds have we a right to claim that the stones will not form again, as in the first instance? Operative procedures have not been in vogue a sufficient length of time to determine definitely how frequently recurrences may take place, but that they do occasionally is well known. I have at present a case under observation with symptoms of recurrence six years after operation. Gerster, in a paper on "Unsuccessful Surgery in Disorders of the Bile-ducts," reports 11 per cent. of relapses in 57 operative cases, and quotes Ochsner's failures as 15 per cent. in *calculous* and 54 per cent. in *non-calculous* cases. It is therefore apparent that the claims of *certainty of cure* and *permanency of result* after operation cannot be accepted without qualification.

The danger from operation, even in the most skillful hands, is not to be overlooked. The mortality in Mayo's series of 4000 cases was 2.57 per cent., and in the cases collected by Bland-Sutton from the English hospitals in 1905,

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17.7 per cent., the results varying with the conditions calling for relief and the experience and skill of the operator. Nor must we confound recoveries from operation with the cure of the patient's ills. As with medical cures, only time can show the permanency of relief. Gerster and others believe that drainage after operation is essential for the relief of the infection, and undoubtedly this is the case; but it has been found that in non-calculous cholecystitis, where the infection and its sequences alone are to be dealt with, operation frequently fails to give relief.

Viewing the brilliant results so often achieved by operation in cases where medical measures have failed to yield recovery, has tended, I believe, to make many take too pessimistic a view of non-surgical treatment. The strong opinions expressed by Kehr, Naunyn, Aschoff, Hansemann, Bain, Solis-Cohen, and others as to the effectiveness of medical treatment are widely held by many practitioners of less experience, and these opinions cannot be dismissed too lightly. I have a considerable number of patients who have remained perfectly well, so far as all symptoms or other evidences of disease are concerned, for periods of from fifteen years down.

The non-operative treatment which has had the widest vogue and has longest held the confidence of the profession is the *Carlsbad cure* or some home modification of this treatment. This consists chiefly in the copious use of hot Carlsbad water or Carlsbad salts dissolved in hot water. The waters of Vichy, Ems, and Neuenahr have a similar action. In addition, *rectal injections of hot water* are sometimes used. The *diet* should be plain and unirritating, and the intervals between meals should not be too long. Some authorities attribute little importance to diet, but I have repeatedly seen dietetic indiscretions followed by a lighting up of acute symptoms. The administration of *bile-salts* and *salicylates* for their cholagogue effect and of *hexamethylenamine* as a biliary antiseptic is generally considered of value. A point which is too frequently overlooked after an acute attack is the necessity of *prolonged rest in bed,* not alone until all symptoms have disappeared, but until pain or tenderness on pressure has passed away and sufficient time has elapsed for the subsidence of the local inflammation of the bile-passages, re-establishment of drainage, and the disappearance of infection. This usually necessitates three or four weeks' absolute rest in bed. *Hot poultices* are of value during the acute stages. I do not believe that any case has been given the full benefit of medical treatment where complete rest has not been carried out. *Vaccines* have been suggested to assist in removal of the infection, but of these I have no personal knowledge. In the subsequent management of cases the *treatment of visceroptosis* by a suitable abdominal support, the *avoidance of fecal stasis and recurring infections* in the portal area (appendicitis) are very important. It is interesting to note that prolonged rest is an essential factor in the surgical management of the disease.

Time will not permit of my entering into a detailed discussion of the medical treatment, nor indeed is this necessary.

In conclusion, I believe that the following statements are fairly warranted by our present knowledge of the disease:—

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1. While surgical intervention is frequently the best, and often the only means offering a chance of relief, its advocacy, based on certainty of cure and assurance of non-recurrence, is not borne out by results.

2. The main object of treatment is the relief of the infection and inflammatory changes, and not merely the removal of the gall-stones. So long as there is no recurrence of the inflammatory attacks, there will be no attacks of gall-stones.

3. Recovery not infrequently occurs under non-operative treatment, especially in early and mild cases, and particularly after first attacks, before serious local damage has been produced by the infection.

4. Medical treatment should be given a fair trial in all cases where the patient's physical condition does not warrant operation, and with the numerous patients who refuse operation. In many such cases complete and permanent recovery from all symptoms of the disease will result.

5. Medical treatment is indicated in many cases as a preliminary to operation, and in order to allow the acute infection to subside as far as possible.

6. Medical treatment is indicated in all cases *after operation*, to allow of complete subsidence of the infection and, if possible, to prevent reinfection and recurrence.

7. It would make for clearness of thinking and give definiteness to therapeutic aims if we adopt the suggestion of Naunyn to give up the term cholelithiasis and classify these various infections of the biliary passages as *cholangitis*, with qualifying terms such as *simple, catarrhal, suppurative, gangrenous, calculous*, etc., according to the condition present in the particular case.

Personally, I never advise strongly against operation in any case unless it is definitely contraindicated, but after explaining the possibility of failure, and that operation may eventually be required, I do not hesitate in early and mild cases, and especially after first attacks, to give medical treatment a thorough trial, and have found that in many instances excellent and permanent results are obtained.

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DISCUSSION.

Dr. Roussel pointed out that whereas gall-stone patients were usually first seen and treated by the physician, and by him often referred to the surgeon, the surgeon but rarely after operation turned the patients over to the medical man again for subsequent treatment. This practice was very different from that obtaining abroad, especially in Germany, where it was the custom for the surgeon to turn the patient over to the physician after operation for medical treatment and care. Instances had occurred where failure to provide this care had been attended with undesirable results. Last winter he had been consulted by a man who had been operated upon two years before for gall-stones. He presented all the symptoms of the disease. Operation showed that there had been a reformation of the stones. If the man had been turned over to a physician after the operation the chances of recurrence would have been greatly lessened.

Dr. Stewart spoke of the treatment of cholelithiasis by bacterial vaccines. Whether or not the treatment was efficacious was a mooted question. He asked for information upon the subject.

Dr. Wilcox said the late Dr. Carl Beck was authority for an anecdote in regard to a distinguished German surgeon who suffered from gall-stones, and went to Carlsbad for relief. Upon being asked why he did not undergo an operation for the trouble, he drew himself up and said: "There is but one surgeon who can operate for gall-stones, and that is myself."

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COPPER CHEMOTHERAPY—WITH SPECIAL REFERENCE TO THE DOUBLE TARTRATE OF COPPER OXIDE AND SODIUM.*

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Only one member of the heavy metal series has been extensively used up to the present time as an antiseptic in internal medicine, viz., silver. The soluble salts of this metal are, owing to their coagulating properties, unsuitable for hypodermic or intravenous injection, and to circumvent this difficulty solutions of various albuminates have been employed. For intravenous injection in the treatment of septicemia colloid silver (collargol) has been most used; but this compound is stated by Cushny to be absolutely inert and devoid of disinfectant action. In regard to all the various so-called organic combinations of silver such as the albuminate, there may be stated to be two objections to their use as internal (intravenous) antiseptics. The first is the fact that in order to eliminate the marked coagulating power of the silver ion, a considerable amount of albumin must be present in the compound, which, of course, reduces the antiseptic power proportionately. In the second place, the comparative toxicity of the silver ion is rather great, and there is always the possibility of argyriasis if the administration is repeated. Copper, on the other hand, is not nearly so toxic. It is still a disputed question as to whether there is such a thing as chronic copper poisoning in man, *i.e.*, from quantities of copper which may enter the blood from the food, as from vegetables colored with copper, from flour improved by copper, from cooking utensils, or from occupations. Copper is, indeed, a normal constituent of the blood in some invertebrate animals, apparently taking the place of and performing the same functions as the hemoglobin of vertebrates.

Added to its comparative lack of toxicity to man is the interesting fact that copper has an exceedingly powerful poisonous action upon lower forms of vegetable life. And this toxicity is remarkably selective; for instance, some of the lower plants, such as algæ, are killed by extreme dilutions (1 part in 1000 million). Yeast is inhibited by dilute solutions, but upon molds it has no detrimental effect; on the contrary, the growth of molds is stimulated. In this connection Cushny has said: "Copper thus seems to have a very powerful poisonous action on certain living forms and to be harmless to others, and the subject deserves further investigation. It is possible that it may prove to act prejudicially to some human parasites, and it is certainly less dangerous to man than many other remedies used as parasiticides and disinfectants." It does not appear far-fetched, therefore, to assume that copper will find a much more important place in therapeutics than it occupies today, and it occurred to

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us that its effects, particularly upon the pus-producing organisms and the septicemias, were worthy of investigation.

The following report is a partial account of some investigations which we have carried out during the past year at the Georgetown Medical School and Hospital with a view of determining how far these suppositions in regard to the use of copper as an internal antiseptic might be justified. It is to be regretted that the results of these researches are not more productive and complete, but even as they are they show perhaps one thing at least, and that is a justification for further researches which we are carrying on at the present time. I take this opportunity of expressing my appreciation for the invariably generous assistance of my colleagues, particularly Prof. Hird, of the chemical department; Prof. Behrend and his clinical laboratory staff, especially Dr. McNamee and Mr. Neuman, and of our devoted Dean, Dr. Kober, who generously provided whatever material aid was necessary.

The results of our experimental work may be considered under the following headings: 1. Chemical and Pharmacological. 2. Bacteriological and Therapeutic. 3. Summary and Conclusions.

I. Chemical and Pharmacological Considerations of the Copper Ion with Special Reference to the Double Tartrate of Copper Oxide and Sodium.

The soluble salts of copper obey the general rule of the heavy metals in precipitating proteids from solution. The inorganic acid salts of the metal possess this power in a high degree, while the salts formed from the organic acids are also proteid precipitants, but less active in this respect. Many experiments were made to determine the quantitative aspects of this relation, and it was hoped that an organic acid salt might be found in which the proteid-precipitating power might be reduced to a practicable minimum. The inorganic acid salts of copper were found to precipitate egg albumin in physiological salt solution in dilutions of 1: 50,000 in some instances.

The following inorganic salts were made in the laboratory and tested in the same way: the formate, acetate, propionate, oxalate, succinate, alpha-hydroxypropionate (lactate), oxysuccinate, malate, tartrate, benzoate, ortho-amidobenzoate (anthranilate), benzoylamidoacetate (hippurate), phthalate, orthohydroxybenzoate (salicylate), gallate, tannate, cinnamate, and urate. These salts were made by adding to hot aqueous solutions of the acid freshly precipitated washed copper oxide until no more dissolved, filtering, and evaporating the filtrate to crystallization. Repeated crystallization was performed until the pure salt was obtained.

The organic acid salt, when soluble, was dissolved in distilled water in the strength of 1 per cent., and tested upon solutions of egg albumin in physiological salt solution. While precipitation did not occur as readily with these salts as with the inorganic, nevertheless this proteid-precipitating power was considerable, appearing in several instances in a dilution of 1: 5000. This power of precipitating proteids possessed by all the copper salts, with both organic and in-

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organic acids, eliminated the possibility of their use for pharmacological and therapeutic experimentation.

There are, however, two well-known methods by which the objection of proteid precipitation may be eliminated: First, by the formation of a double salt, and, second, by the preformation of an albuminate. The best known of the double salts of copper is the double tartrate of copper oxide and sodium. To make this compound, Harnack recommended the following procedure[1]:— A solution of copper sulphate is completely precipitated with NaOH. The precipitate is dissolved in tartaric acid, and sodium hydroxide then added until the fluid is neutral. Albumin is not precipitated by this solution unless acid is in excess. Klemptner, in studying the effects of copper upon the animal organism, made the double salt in the following way: To a solution of copper sulphate, sodium tartrate is added. The double tartrate of copper oxide and sodium is precipitated. This is washed on a filter until the filtrate shows no reaction with barium chloride (absence of sulphate). Sodium hydroxide is carefully added until the precipitate is dissolved and the reaction is neutral or slightly alkaline. The solution is then diluted with water in the proportion of 1 part of solution to distilled water, enough to make 10 parts.

In our investigation the double salt was made according to Klemptner's method. The resulting fluid is dark blue in color, with a specific gravity of 1021. Its exact neutrality was determined by titration with phenolphthalein. The quantitative determination of the amount of copper oxide present in the solution was done by electrolysis in a platinum crucible; 2 c.c. of the diluted solution was put in the tared crucible with immersed platinum electrode. The 110-volt direct current was passed until all the copper had become deposited as metal on the crucible. This was carefully dried and weighed. For example, in one instance the original weight of the crucible was 31.1035 Gm. Weight after electrolysis, 31.1120 Gm. Difference, representing weight of copper as metal, 0.0085 Gm. Calculated as CuO on the basis of formulæ: 63 (atomic weight of Cu) is to 79 (molecular weight of CuO) as 8.5 is to x. X equals 10.6 mg. CuO in 2 c.c. of solution, or 5.3 mg. of CuO in 1 c.c. of solution. Klemptner arrived at a quantitative estimation of the amount of CuO present in his solution by means of a chemical reduction operation.

The solution of the double salt prepared as above does not precipitate proteids in any concentration, either of egg-albumin solution or of blood-serum. But in mixtures of diluted human blood, as observed by me, and of dog's blood, as observed by Klemptner, after some hours the corpuscles turn brownish red and settle to the bottom of the tube, leaving supernatant the clear-blue solution. This only occurs when the undiluted copper solution is added to the blood. Klemptner was of the opinion that a definite chemical compound of copper and hemoglobin is thus obtained, and suggested that a quantitative estimation of the amount of hemoglobin might be made by using solutions of known copper strength. He regarded the copper-hemoglobin combination as similar to the zinc-hemoglobin combination previously described by Kobert.

[1] Arch. f. exper. Pathol. u. Pharm., 1874-75, iii, 44.

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Although experiments to determine the toxicity of the double tartrate of copper oxide and sodium solution in terms of CuO had been made by both Harnack and Klemptner, it was deemed advisable to repeat these observations before attempting to apply the drug therapeutically, even in animals, because of the necessity of eliminating all possibilities of complicating results by the production of toxic phenomena, and especially to aid in the calculation of the therapeutic dose. The undiluted solution, even in comparatively small quantities, was found extremely toxic to frogs, as the following protocols of experiments will show:—

1. Spotted frog, weight 40 Gm.; 0.5 c.c. of the solution of copper oxide sodium tartrate (2.2 mg. CuO) injected into anterior lymph-sac at 3 P.M. 3.30 P.M., respiration feeble; great depression; muscular twitching, especially of gastrocnemii; eyes closing. 3.45 P.M., respiration almost imperceptible; slight muscular twitching of thigh; death. Autopsy shows auricular cavities distended and dark, and ventricle paralyzed in diastole.

2. Spotted frog, weight 29 Gm.; 0.5 c.c. of the solution of copper oxide sodium tartrate (2.2 mg. CuO) injected into anterior lymph-sac at 2 P.M. 2.10 P.M., retraction of head; depression, respiration feeble. 2.20 P.M., eyes closed; respiration stopped. 2.30 P.M., death. Autopsy showed that copper solution had to some extent entered the peritoneal cavity. Heart distended.

To arrive at the minimum fatal dose for frogs the solution was injected in extreme dilution, and the quantity of copper gradually increased. The results are shown in the following table. In each case spotted frogs were used (month of August), and the injection was made into the anterior lymph-sac. The quantity of fluid injected in each case was 0.5 c.c.:—

TABLE SHOWING MINIMUM FATAL DOSE IN FROGS.

	Weight in Gms.	Dilution.	Calculated amt. of CuO.	Result.
I.	31	1 to 400	0.0066 mg.	No symptoms.
II.	31	1 to 300	0.0088 mg.	No symptoms.
III.	37	1 to 250	0.010 mg.	No symptoms.
IV.	35	1 to 200	0.013 mg.	No symptoms.
V.	35	1 to 150	0.017 mg.	No symptoms.
VI.	31	1 to 100	0.021 mg.	No symptoms.
VII.	31	1 to 50	0.05 mg.	No symptoms.
VIII.	37	1 to 25	0.10 mg.	Not active the next day.
IX.	35	1 to 10	0.21 mg.	Next day sluggish; skin dark colored.
X.	30	1 to 5	0.53 mg.	Died following night; skin dark green.
XI.	30	1 to 3	0.89 mg.	Died; skin almost black; tissues swollen and dark; heart distended.
XII.	39	1 to 2	1.3 mg.	Died; dark fluid in lymph-sac; abdominal muscles dark; fluid in peritoneum; auricles distended and black.

It will be seen from the table that the minimum fatal dose of the solution for frogs in terms of copper oxide is 0.5 mg. This result corresponds ex-

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actly with that obtained by Harnack, who found that in frogs 0.5 to 0.75 mg. produced complete muscular paralysis in several hours, and that 3 mg. produced cardiac arrest in one hour, preceded by muscular twitchings. Klemptner, in his experiments on the toxicity of his solution, did not work with frogs.

TOXICITY IN MAMMALS.—Harnack found that in rabbits 0.5 Gm. given subcutaneously was lethal. My own results with rabbits indicate a somewhat higher toxicity, as is shown by the following experiments:—

1. Gray rabbit, weight 1 kilogram. Injected hypodermically 1 c.c. of a solution of double tartrate of copper oxide and sodium diluted, equal parts, with salt solution. This represented 5.3 mg. CuO. The animal recovered, and, beyond a slight diarrhea, showed no symptoms.

2. Gray rabbit, weight 1.5 kilograms. Injected 2 c.c. of copper solution diluted with equal parts of salt solution. This represented 10.6 mg. of CuO. The animal recovered.

3. Gray rabbit, weight 1 kilogram. Injected hypodermically 3 c.c. of copper solution diluted with equal parts of salt solution. This represented 15.9 mg. CuO. The animal became depressed, with feeble pulse and respiration, and partial paralysis of voluntary muscles. The animal died in twenty hours. Autopsy findings substantially as in Case 4.

4. Black rabbit, weight 1.5 kilograms. Injected subcutaneously 4 c.c. of copper solution, diluted with salt solution, representing 21.2 mg. of CuO. Muscular twitching and depression followed, with complete paralysis of voluntary muscles, the animal lying flat, with weak heart and respiration and dilated pupils. Sensibility unaffected. The animal died the following night. Autopsy showed chocolate-colored subcutaneous ecchymoses in lumboabdominal region, where the injection was given. Subcutaneous tissue of abdomen edematous. Peritoneal cavity filled with fluid, and pleura edematous. Right auricle and ventricle distended with dark, clotted blood. Liver dark and hemorrhagic. Blood in the veins clotted solid. Stomach distended with food and colon with feces. Spleen and pancreas apparently normal. Kidneys hemorrhagic.

It will thus be seen that the minimum lethal dose for rabbits of the solution, calculated in terms of copper oxide, is 0.0159 Gm., or 15.9 mg., which represents about three times the degree of toxicity observed by Harnack. An average lethal dose of 15.9 mg. for a rabbit weighing 1 kg. corresponds somewhat closely to the results obtained by Klemptner in the cat. He injected intravenously a cat weighing 2550 Gm. with a quantity of solution corresponding to 15.2 mg. of CuO, diluted with salt solution so that each cubic centimeter contained 0.7 mg. of CuO. The pulse and respiration became irregular and accelerated, muscular paralysis followed, with diarrhea, unreacting pupils, coma, and death. It must be remarked that, of course, in this experiment of Klemptner the injection was made intravenously, which would tend to lessen the size of the fatal dose; but it must also be noticed that the solution was given highly diluted in salt solution, which would tend to increase the dose which could be given before a fatal result occurred.

We did not perform any toxicity experiments upon dogs. In comparing the results of work done on this animal by Harnack and Klemptner, we find that the former gives the fatal subcutaneous dose as 0.4 Gm. CuO, while the latter gives the fatal intravenous dose as 0.02 Gm. for a dog weighing 3 kg. It is therefore probable that the minimum fatal dose for dogs lies somewhere between these extremes, possibly in the neighborhood of 0.15 Gm. of CuO.

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From the results of our experiments, and those of Harnack and Klemptner, it may be stated as probable that the copper double salts primarily stimulate and subsequently paralyze the peripheral terminations of motor nerves, involuntary muscles, and heart muscle; that copper in this form has no effect upon blood-serum, but combines more or less firmly with the hemoglobin of the red corpuscles, and that death is due to a combination of these effects. Curci, an Italian observer, is of the opinion, however, that the effects noted from the double salt are due to an ascending paralysis of the central nervous system. This view is contrary to the generally accepted opinion.

COPPER ALBUMINATE.—This compound has been studied pharmacologically by Schwarz, who made copper albuminate by a method similar to that previously proposed by Schmiedeberg and Marfori for making albuminate of iron. The method is as follows: From a solution of alkali albuminate the proteid is precipitated as acid albumin by means of acetic acid. This is again dissolved by means of sodium hydroxide, and a solution of copper acetate added. The result is an alkaline solution of copper albuminate which is deep violet blue in color. This is heated for a day on the water bath. After cooling, the copper combination is precipitated with acetic acid, filtered, and washed as long as the filtrate shows copper reaction (H_2S or potassium sulphocyanide). The precipitate is finally brought into neutral solution by careful addition of sodium hydroxide. The compound cannot be made to contain more than 6 per cent. of CuO. Schwarz made use of a solution containing 0.005 Gm. of CuO to every cubic centimeter of solution. He found by experiments upon frogs and rabbits that the symptom-complex of acute poisoning is completely analogous to that found after the use of the solution of the double tartrate (copper oxide sodium tartrate). According to Schwarz, however, the lower threshold of poisonous dosage is higher in frogs than with the double salt. He found the minimum lethal dose for rabbits the same as that found by Harnack for the double salt.

In both frogs and rabbits the symptoms came on more slowly than Harnack had found to be the case with the double salt. For example, as has been mentioned previously, Harnack found that in frogs 0.5 to 0.75 mg. of CuO in the form of the double salt produced paralysis in a few hours, and this corresponds to our own findings; but Schwarz found copper albuminate began to be toxic to frogs only when the dose reached 2 to 3 mg. of CuO, and then the first signs of paresis became manifest only after eight to ten hours. Death did not occur for two or three days after such doses. Again, in rabbits, while Harnack found doses of the double salt corresponding to 0.05 Gm. of CuO subcutaneously were fatal in some hours, the same results were produced with the albuminate in similar dose only after several days. This Schwarz attributed to the more gradual decomposition of the albuminate. In the foreground of the phenomena seen by Schwarz was always fibrillary twitching, followed by paralysis of voluntary muscle. He also noted diarrhea as a constant symptom. Although we made copper albuminate according to the method recommended by Schwarz, we did not undertake any experiments to determine its toxicity or pharmacodynamic action, since there did not appear to be any manifest advan-

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tages of the albuminate over the solution of the double salt for the purposes intended.

II. Bacteriological and Therapeutic Considerations of the Copper Ion, with Special Reference to its Presence in the Double Tartrate of Copper Oxide and Sodium.

Many of the salts of copper have been carefully examined in respect to their antiseptic power. Green studied the action of the chloride, acetate, nitrate and phenolsulphonate (sulphocarbolate), and concluded that the soluble copper salts, especially the chloride, are endowed with considerable disinfecting power. He recommends the use of copper chloride solution for purposes of wound disinfection. Gildersleeve investigated the bactericidal action of copper on organisms in water. He found that dilute solutions of copper have a marked destructive action on many bacteria. Of the salts, he found the sulphate most active, which he attributed to its undergoing electrolytic dissociation most readily. The amount of sulphate necessary was very small, 1 to 250,000 to 1 to 100,000. Green studied the action of so-called colloidal copper obtained by allowing water to stand in polished copper vessels. Stewart, in a study of the action of colloidal solutions of copper upon *Bacillus typhosus,* concluded that water containing colloidal copper has a rapid toxic action upon this organism. He calculated that the amount of copper given off in a 1-liter copper vessel in three hours is 1 in 4,000,000, and yet in this extreme dilution typhoid bacilli were destroyed in one or two hours. The work of Moore and Kellerman is also important in this regard, and tends to substantiate the findings of the investigators above mentioned.

(*To be concluded in the December issue.*)

THE DIAGNOSIS OF SUPPURATION OF THE LABYRINTH.*

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Before taking up a study of the diagnosis of labyrinth suppuration it will be necessary to review briefly the etiology and pathology of this somewhat obscure and comparatively rare condition. Without doubt many such cases go unrecognized, since Ballenger and others state that about 1 per cent. of all chronic suppurative otitis media is complicated by suppuration of the labyrinth.

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* Read at a meeting of The Philadelphia Laryngological Society, February 18, 1913.

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In practically every case in which the labyrinth is invaded by pyogenic micro-organisms the source of the infection is the middle ear; occasionally it is secondary to an *acute* condition, but in the great majority of cases it follows a destructive middle-ear process of longer duration, or, as we arbitrarily call any case of suppuration that lasts for more than six weeks without resolution, a *chronic* suppurative otitis media.

Diffuse suppuration of the labyrinth is at times secondary to circumscribed labyrinthitis and diffuse serous labyrinthitis, and is to be differentiated in its early stage from these two diseases, as the early history of the case will frequently be that of one or the other of these. According to Ruttin, diffuse serous labyrinthitis is always an acute disease with a sudden onset, and does not become chronic, although it may leave permanent changes in the labyrinth; it may occur with or without fistula formation. It must be borne in mind, in studying the labyrinth reactions, that these two diseases may be irritative in type while suppurative labyrinthitis is destructive; in other words, in the former we may get increased or diminished reactions depending on the duration of the case, while in the latter, since it is destructive, the labyrinth does not show reactions to the stimuli used in the various tests.

In *circumscribed labyrinthitis* we have a serous or infective process confined to one portion of the labyrinth; this portion is usually destroyed, but the remaining portion from which it is walled off will respond to the tests of its function. Its symptoms are, briefly: Frequent attacks of dizziness, more especially on quick movements of the head, and usually transitory in duration; impaired, but not lost, hearing; nystagmus present, but variable in character and duration, while tests of the static labyrinth show prompt reaction. The fistula test is positive. This is performed by placing the nose-piece of a Politzer bag tightly in the external auditory meatus and compressing the air in the middle ear. If the air escapes through the Eustachian tube it must be blocked with a bougie. If a fistula exists between the inner and the middle ear, with the membranous labyrinth intact, nystagmus in one direction will result on compression, while on suction there will be nystagmus in the opposite direction.

The source of infection in *diffuse suppurative labyrinthitis* is in the middle ear, which must first have been involved. The infection gains entrance to the inner ear through a fistulous opening produced by the erosion of the bony wall from the pressure of a cholesteatoma, caries of the inner wall of the tympanum resulting from the middle-ear suppuration, through the round window by the destruction of its membrane or the oval window when the stapes is destroyed, or by the lymph-channels. Once the inner ear has become infected, its pathology is similar to that of an acute, and later a chronic, suppurative otitis media. But from the very beginning, and this it is most important to bear in mind, the functions of the inner ear, hearing and the maintenance of equilibrium, are lost; and though the process may subside or become cured, function never returns. When it passes into the latent stage, slow caries takes place, with granulation-tissue formation and constant or intermittent suppuration which may continue indefinitely, or at any time, by invading the meninges, cause death from a purulent meningitis or brain abscess.

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We must remember also that there are two stages in diffuse suppurative labyrinthitis, each of which has distinct symptoms of its own. They are the acute or manifest stage, when the entire labyrinth is suddenly infected and filled with pus; and the chronic or latent stage, when the acute symptoms have subsided and the inner ear is draining, but the disease progresses slowly with the usual granulations and necrosis that characterize chronic suppurations, and which are distinctly similar to the changes that occur in chronic suppurative otitis media. Of course, the history of the case will in a large measure determine which stage is present, but the main points to be remembered are that the labyrinth is destroyed from the onset of the disease; that it therefore is non-reactive, and that this destruction is permanent as regards the functions of the ear.

The first consideration in the *diagnosis* of suppuration of the labyrinth is the history, and it is necessary to obtain one as complete as possible. If the case is secondary to a circumscribed or a serous labyrinthitis, we will have a history of vestibular symptoms, vertigo, nausea and possibly nystagmus, extending over some length of time before the onset of the present disease. In any case, whether the condition is secondary to pre-existing labyrinth inflammation or not, there will be a history of an acute or, much more frequently, a chronic suppurative otitis media, which may have been intermittent over long periods of time. The attack begins *abruptly* with pronounced deafness, frequently not recognized by the patient as total because of the previous diminution of hearing from the middle-ear disease, and intense vertigo accompanied by nausea and loss of equilibrium. The temperature and pulse are normal and there is no localized pain, although there may be intense headache from a concomitant serous meningitis. The type of vertigo is such that surrounding objects seem to revolve about the patient in the axis of vision toward the sound side, or with the eyes closed he himself seems to be turning rapidly. This can only be controlled in a measure by keeping in the recumbent posture, which is usually assumed spontaneously. Spontaneous rotatory nystagmus toward the sound side is always present and may be best observed by having the patient fix the gaze on a somewhat distant object to avoid convergence of the eyes, which inhibits the nystagmatic movement; or by placing opaque spectacles before the eyes, which answers the same purpose. By now raising the upper lid and watching the conjunctival vessels by reflected light, the movement of the eyeball becomes plainly visible. This spontaneous nystagmus is always accentuated by turning the eyes in the direction of the quick component and somewhat inhibited by fixing the eyes in the opposite direction, although it is not lost even then. Vertigo is most in evidence at the beginning of the attack and lasts for several days, improving gradually, although it may still be excited by sudden head movements for a considerable length of time. Like vertigo, the nystagmus, strongly marked at first, later can only be elicited by turning the eyes toward the sound side, and it finally disappears after a duration of several weeks. The hearing will be found totally destroyed; the acoumeter, the watch on the bone, loud conversation through the 3-meter speaking tube, the "a" fork of Bezold, or the noise apparatus of Barany and others, not being heard, and con-

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vincing us that total deafness exists. The Weber test will show the sound lateralized toward the healthy ear. The Rinné is negative, with greatly shortened bone conduction and lost air conduction. That any sound at all is heard by bone conduction is due to conduction into the healthy ear. A shortened Schwabach test is also obtained.

Examination of the fundus of the ear shows the usual destructive process of an otitis media suppurativa, with frequently, in a chronic case, necrotic, granulation-covered bone on the labyrinthine wall, and possibly a fistulous opening from which pus may or may not be seen exuding. Frequently also the case may be complicated by an acute mastoiditis or a chronic one with the formation of cholesteatoma.

Disturbances of equilibrium are usually marked, the patient finding it difficult or impossible to stand, more especially with the eyes closed. The tendency to fall is toward the diseased side. This disturbance of equilibrium exists in a marked form only in the acute or manifest stage, but as has been shown by Mackenzie and Kerrison it may still be present in the late, or latent, type of the disease. When one labyrinth is suddenly destroyed, vertigo and loss of equilibrium are occasioned by the unopposed action of the sound labyrinth which causes an overbalance, but, as we have seen, the patient soon learns to use his visual, tactile, muscular, and arthroidal senses to maintain his upright position under all ordinary conditions. Late in the disease, however, we still often find traces of vertigo remaining, which can be demonstrated by the Romberg test, hopping, walking forward, sideways and backward with the eyes closed, or by using von Stein's goniometer.

Total destruction of the static labyrinth is shown by its non-reactability to the caloric, turning (reduced reaction) and galvanic tests. If the ear under consideration fails to produce rotary nystagmus toward the opposite side after irrigation with water 10 degrees colder than the body temperature for five minutes, with the head erect, we may conclude that the semicircular canals have lost their function, though this test is not a sure indication, since obstructions in the external canal and the middle ear may prevent the water reaching the inner wall of the tympanum. In any case it should be supplemented by the turning test, which I need not describe in detail: Suffice it to say that if, after ten turnings toward the normal ear, the duration of the after-turning nystagmus to the diseased side is very materially shortened, the result of the caloric test is confirmed. That nystagmus is apparent at all in this test is due, not to any retention of function in the diseased semicircular canals, but to the response of those in the sound ear to the irritation. The duration of this nystagmus is always very much shortened. A third method of determining whether or not the semicircular canals are destroyed is the galvanic reaction. If more than 10 or 12 milliampères fail to produce a nystagmus, then function is gone. The fistula symptom is absent in suppurative labyrinthitis, for in these cases, although a fistula is present, the destruction of the labyrinth prevents reaction to any test whatsoever.

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SUMMARY.

1. In cases of labyrinth suppuration there has been a pre-existing acute or chronic suppurative otitis media.

2. Diffuse suppurative labyrinthitis is almost invariably unilateral.

3. There is frequently a history of fleeting attacks of dizziness and, if examined for, irregular nystagmus (symptoms of circumscribed labyrinthitis).

4. The onset is sudden, with intense vertigo, nausea, and vomiting, and disturbed equilibrium, even to falling, and persisting in a less degree in the latent stage; there is spontaneous nystagmus to the sound side. All these phenomena except the disturbed equilibrium disappear in a few days or weeks.

5. There are no febrile disturbances or tinnitus.

6. There is frequently headache from concomitant serous meningitis.

7. Sudden, total, and permanent deafness.

8. Caloric reaction negative.

9. Turning test negative (greatly reduced).

10. Galvanic test negative.

11. Fistula symptom negative.

12. The condition is not usually accompanied by seventh-nerve paresis unless this be due to complicating mastoiditis and paralabyrinthitis.

Authors' Abstracts

THE DANGERS AND DISADVANTAGES OF SPINAL ANESTHESIA.*

BY W. WAYNE BABCOCK, A.M., M.D.,

Professor of Surgery in the Medical Department of Temple University;
Surgeon to the Samaritan and Garretson Hospitals,

PHILADELPHIA, PA.

THE innocuousness or safety of an anesthetic is a relative matter, dependent largely upon the experience and the skill of the user. As compared with other anesthetics, ether, from its nearly universal use, may be considered the standard general anesthetic. It has a mortality that has been variously estimated from 1 in 50 anesthetizations, as reported by a surgeon in central Pennsylvania, to 1 in 50,000 etherizations, as reported by the Mayo clinic. We must be guided, therefore, in estimating the mortality of anesthetics, by our personal facilities and experiences. Personally, I can report at least 8 fatalities directly or indirectly attributable to the anesthetic, in a series of about 2000 anesthetizations. With nitrous oxide-oxygen there has been 1 fatality in less than 100 administrations, for prolonged operations. For comparison, the -

* Abstract of paper read at the Fourteenth Annual Meeting of The American Therapeutic Society, held in Washington, D. C., May 5 and 6, 1913.

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experience of five unselected assistants or associates has been taken. These physicians, from an estimated aggregate of about 12,000 anesthetizations, report 23 deaths: 18 from ether, 2 from chloroform, 2 from ethyl chloride, and 1 from nitrous oxide-oxygen administered by an expert. The disproportionate mortality from ether is due to the fact that, in Philadelphia, ether is used much more freely than any other anesthetic. From these figures we may estimate that while ether as employed by expert anesthetists, with light degrees of anesthesia and upon selected cases, may have a very small mortality, given as it often is, by imperfectly trained resident physicians and in the exigencies of a general hospital practice, we personally find the mortality to be hardly less than 1 to 500 etherizations. This gives us a rather fair basis for comparison with spinal anesthesia. For nine years all of our operations below the diaphragm upon patients desperately ill have been done under spinal anesthesia. At least 4 of these patients had had previous attempts at etherization in other clinics, but had collapsed under the anesthetic, the operation being consequently abandoned. In upward of 5000 injections with the production of spinal anesthesia, we have had 10 deaths on the operating table and 1 death after operation; 5 of these patients were nearly moribund or were hopeless under any form of treatment, 3 very ill patients died suddenly during the evacuation of enormous empyemas, and 1 patient with advanced peritonitis from gall-bladder disease was drowned by regurgitant vomiting. The tenth patient was in bad condition from gall-bladder disease associated with a serious heart lesion. The remaining patient developed heart-failure during the removal of an enormous uterine fibroid, was revived, but died as a result of circulatory arrest about two days after the operation.

In our experience, therefore, spinal anesthesia has given a mortality slightly less than that of ether. Spinal anesthesia has proved particularly dangerous in peritonitis involving the upper abdomen, in very large empyemas, and in patients shocked or nearly moribund from disease. It should be used with care or avoided in conditions of hypotonicity of the circulatory system and in advanced thoracic disease.

As to morbidity, nausea and vomiting may occur upon the operating table, but there is no secondary nausea or vomiting from the anesthetic. Albuminuria or other evidences of renal irritation have not been observed. As compared with ether, 61 per cent. of etherized patients complained of severe postoperative backache against 16 per cent. after spinal anesthesia. The average duration of incisural pain after ether was forty-nine hours, as compared with twenty-nine hours after spinal anesthesia. Postoperative headaches occur from the injection of spinal anesthesia when imperfectly prepared solutions are employed. These headaches may be very severe. In our recent series, 21 per cent. of the patients after spinal anesthesia had headache, as contrasted with 50 per cent. after etherization; the headaches, as a rule, were more severe after the use of ether. Several years ago, 5 ocular palsies of temporary duration were observed. No ocular palsy has now occurred for several years, and it is believed to have been due to the use of imperfectly sterilized solutions. One patient had severe sciatica from the puncture of a nerve-root.

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No other case of organic nerve-lesion attributable to the injection has been observed. In the hysterical or neurotic, however, postoperative weakness or pain is not infrequently attributed to the injection. This constitutes a distinct objection to the use of spinal anesthesia. We have, from a technical standpoint, found that the operator may very rarely fail to enter the spinal canal. This occurred in 1 instance in a kyphotic dwarf. In from 2 to 5 per cent. of the patients, the analgesia is imperfect and the injection must be repeated or another anesthetic given.

The duration of the anesthesia rarely exceeds one and one-half hours, but the patient may often be carried for a considerable time beyond this period by the use of a small quantity of ether or narcotics. The dosage of the anesthetic should be accurate, but unfortunately different samples of the synthetic alkaloids employed show variations in strength and toxicity, and the dosage may have to be changed with each new lot of the drug. This constitutes a decided objection and an added danger. If a steel needle is employed it may be broken between the laminæ. This occurred in 1 of our patients, an incision being immediately made and the portion of the needle extracted. Spinal anesthesia is dangerous in the hands of the careless or imperfectly trained, and there is danger in shaking or moving the patient during the course of the analgesia. The position of the patient must also be continuously watched to prevent upward diffusion of the drug. Meningeal infection is possible from a careless technique. We have observed no case in our series, but in 1 instance a tuberculous meningitis developed several weeks after an operation for tuberculosis of the knee. Repeated injections of the anesthetic may be given without harm. In 1 of our patients spinal anesthesia has been induced eleven times with no evidence of cord or root injury. Consciousness of the patient is frequently an objection to the method. This usually may be obviated by preliminary injection of narcotics beneath the skin. The consciousness of the patient is, of course, objectionable to those who fail to maintain a proper *morale* in the operating room. In general, the use of spinal anesthesia should be restricted to those who have perfected themselves in its use. Ether, despite its many drawbacks, is the safest of all known general anesthetics in unskilled hands.

DISCUSSION.

Dr. Riley said that the subject was interesting to the physician as well as to the surgeon. He especially commended the essayist for his frankness. All patients should be carefully watched, and in every case a careful physical examination should be made before the anesthetic was given. Fibroid patients in particular were poor subjects for operation. They had already lost much blood and succumbed readily to shock. They looked well, but were in reality bad risks. When pneumonia occurred it was his custom to look for a possible source of infection, and he not infrequently found that the anesthetist or an assistant had had an attack of grippe. It should not be forgotten that pneumonia and bronchitis might occur irrespective of the anesthetic. In a number of the cases reported by Dr. Babcock the ill effects might not have been primarily due to the anesthetic at all. In operations upon the lung, for instance, particularly for empyema, where the lungs were handled a great deal, death might be due to interference with the vagus.

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Dr. Babcock said that the intraspinal method could be employed when other anesthetics were contraindicated. It was comparatively safe, but it should not be forgotten that untoward results might follow the use of any anesthetic. It caused a marked lowering of the pulse rate and blood-pressure. This was due to the blocking out of the vegetative nervous system, so well described by Dr. Hemmeter. The higher vagus, however, was active and sent stimuli to the stomach and intestines, and this explained the increased peristalsis and spontaneous evacuation of the bowels often noted in intraspinal anesthesia. Thus, the condition was the reverse of that obtaining in the early stages of anesthesia by other methods, and patients with low blood-pressure, and particularly those suffering from shock, were not good subjects for the intraspinal method. The cases should be selected with such considerations in mind. If, however, the patient was not in a condition of shock, the intraspinal method tended to prevent its occurrence.

ANTITYPHOID INOCULATION.*

By MAJOR F. F. RUSSELL, Medical Corps, U. S. A.

THE writer, largely by statistical tables and graphic charts, summarized the effects of antityphoid vaccination up to the close of the year 1912 in the United States Army, both at home and abroad, among the officers and enlisted men. During the last four years approximately 200,000 persons had been immunized, entirely without fatalities or any untoward results. In the army none but the healthy were immunized, any illness, of whatever nature, automatically postponing vaccination until after recovery. The immunity, no doubt, diminished gradually, as after vaccination against small-pox. The custom at present was to revaccinate at the beginning of each four-year period of enlistment, not because all immunity had disappeared, but because it seemed unwise to trust to anything less than the maximum immunity obtainable. The practice of vaccinating against typhoid had been a pronounced success in the naval and military services, in hospitals, schools, institutions, among pleasure seekers, and in contractors' camps, especially those located on watersheds—in fact, wherever in civil and military life it had been used. Its more general use, especially among the young, was advisable. The fact that it occasionally failed to afford complete protection was not a valid objection to its use, but rather an indication for its repetition, at intervals to be determined upon in the future. It would certainly prove as efficacious in civil life as in the army, and its extended use would hasten the time when typhoid fever will become a negligible factor in our public-health problems.

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* Abstract of paper read at the Fourteenth Annual Meeting of The American Therapeutic Society, held in Washington, D. C., May 5 and 6, 1913.

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Cyclopedia of Current Literature

ACIDOSIS, TWO TYPES OF.

Acidosis should be regarded as either endogenous or exogenous, the absorption of intestinal alkaloids from the putrefaction of proteid material playing an important part in the causation of the latter type.

Acetone, diacetic acid and betaoxybutyric acid are only partly responsible for the symptoms of acidosis, parahydroxyphenylacetic acid and other organic acids probably also exerting their influence.

There is a distinct acidosis in adults due to faulty liver function and absorption of intestinal poisons, which can develop coma and prove fatal, but in which no diabetes or uremia is present.

As a general rule the indications in treatment are (*a*) neutralization of the acids present, (*b*) free catharsis, (*c*) abstinence from proteids and fats, (*d*) abundance of carbohydrates and water. Allan Eustis (New Orleans Medical and Surgical Journal, September, 1913).

ASTHMA, TREATMENT OF.

During the past four years, according to the author, there have been examined in the Mayo Clinic about 300 cases of asthma. In over 90 per cent. of the cases the principal lesions which might be considered as etiological were in the upper respiratory tract. Chronic suppuration or the retention of mucoid secretions in the nose or accessory sinuses occurred in the majority. Treatment was directed toward securing free and continuous drainage of every portion of the tract and little attention paid to possible reflex factors. In most cases the relief of the asthma corresponded almost exactly with the degree of success in obtaining the above result.

With regard to the prospects of relieving asthma by overcoming the anaphylactic sensitization probably in part responsible for it, the author points out that various methods of desensitizing animals have been discovered, but no method yet reported gives a lasting immunity, and all are attended by high mortality. Until a safe and efficient method is available, the treatment of asthma must be directed, as in the past, to the relief of symptoms by whatever measures are indicated in the individual case. Justus Matthews (Medical Record, September 20, 1913).

BRONCHITIS, CHRONIC, TREATMENT OF.

In bronchitis associated with chronic pulmonary congestion, usually indicated by accentuation of the pulmonic second sound, the condition is best relieved by small doses of salines frequently repeated and nitroglycerin, $\frac{1}{100}$ grain (0.0006 Gm.) three or four times daily. Indeed, in all cases of chronic bronchitis, the bowels should be kept free and open with salines or some mild laxative. Certain cases undoubtedly call for forced nourishment. Milk, 3 to 4 pints, with from 2 to 6 raw eggs taken through the day, in addition to regular nourishing meals, will increase the general resistance wonderfully.

Much of the cough in chronic bronchitis can be controlled without drugs if the patient will understand that nonproductive coughing is usually unnecessary and with a little effort and practice can be suppressed. The author usually depends upon drugs stimulant in

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character to rid the lungs of secretion, relieve congestion, and improve the respiration and nervous system:—

℞ Ammonii chloridi,
Pancreatini, āā 3ij (8 Gm.).
Spiritus ammoniæ aromatici,
Tincturæ nucis vomicæ, āā f3iv (15 c.c.).
Spiritus glycerylis nitratis, ♏xxv (1.5 c.c.).
Elixiris calisayæ, q. s. ad f℥iij (90 c.c.).
M. Sig.: Teaspoonful in water 3 or 4 times daily.

Ammonium carbonate, 5 grains to a dose, will greatly increase the expectorant powers of the combination. Ammonium chloride, or any expectorants, should not be continued beyond the stage where the secretions are sufficiently fluid and easily expectorated. Profuse liquid secretions may require moderate doses of belladonna, with which the author usually combines 1/30 grain (0.002 Gm.) of strychnine. The following seems to do good in some cases:—

℞ Olei caryophylli,
Spiritus ammoniæ aromatici, āā f3ij (8 c.c.).
Misturæ glycyrrhizæ compositæ, q. s. ad f℥iij (90 c.c.).
M. Sig.: Teaspoonful after meals.

For cases with thick, tenacious sputum, or when the sputum tends to be purulent in character, the most valuable drug is creosote. The dose should be 1 drop three times a day, increasing 1 drop daily up to 10 or more drops to the dose. Success in prescribing this drug depends upon having pure beechwood creosote, thoroughly dissolved in 1/4 to 1/2 glass of water as hot as can be swallowed without scalding.

Sandalwood oil and terpinol seem to be of benefit where the secretions are persistently scanty. In cases complicated by asthma or emphysema the author adds physostigma to the regular treatment—about 1/8 grain (0.008 Gm.) of the extract to a dose.

Inhalations are used only when other methods seem inefficient. A stimulant inhalation for the nebulizer, to be used several times daily, is the following:—

℞ Menthol, gr. x (0.6 Gm.).
Oil of eucalyptus, f3j (4 c.c.).
Oil of tar, f3ij (8 c.c.).
Liquid petrolatum, f℥j (30 c.c.).

Medicated steam inhalations, if used at all, should be taken at least three times daily. A good combination for this purpose is the following, 1 or 2 drams of which is added to boiling water in an ordinary or croup kettle, the patient inhaling as much of the steam as is possible for twenty or thirty minutes:—

℞ Compound tincture of benzoin, f℥j (30 c.c.).
Menthol, gr. x (0.6 Gm.).
Oil of eucalyptus,
Creosote, of each, f3iv (15 c.c.).

Terpine hydrate and rectified oil of turpentine in large doses are the best internal drugs for fetid bronchitis or bronchiectasis.

To practically all patients with chronic bronchitis the author gives iodine and arsenic, the former as an inunction, to avoid disturbing the stomach, or in the form of potassium or sodium iodide or the syrup of the iodide of iron, all in moderate doses. As general tonics he uses hydrochloric and phosphoric acids, strychnine, arsenic, and sometimes iron.

Following the line of treatment described, one is but seldom obliged to resort to such sedatives as codeine or heroine. J. J. Walsh (New York Medical Journal, May 3, 1913).

COLON BACILLUS INFECTION OF URINARY TRACT IN CHILDREN.

The differential *diagnosis* of acute colipyelitis depends on: (1) presence of pus and colon bacilli in the urine along with severe general symptoms; (2) absence of any signs of organic disease out-

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side the urinary tract which could account for the condition.

At the onset the temperature rises rapidly, often reaching 103°-105° F., or even higher, and frequently assuming a remittent type. This may go on for many weeks. The frequency of well-marked rigors in young children with acute pyelitis is interesting. Vomiting occurs in more than half of the cases. The extreme misery, restlessness, and general tenderness of these children when their temperature rises form valuable diagnostic signs. They are drowsy and often delirious, and, if very young, frequently squint. The respiration rate, compared with that of the pulse, is often considerably quickened. In many cases there is great disinclination for food and even fluids. The local symptoms are either slight or apparently quite absent. Indefinite colicky pains may be present and frequency of micturition is common. The microscopic and chemical features of the urine are much the same whether the case be one of simple cystitis, pyelitis, or pyelonephritis.

In the *treatment* of ordinary cases the first indication is to insure a free discharge of urine, usually by giving large quantities of fluid to drink. If the patient refuses to drink enough, the fluid must be administered through a stomach-tube or by the rectum. The second indication is to see that the bowels move adequately, preferably using sodium phosphate and an occasional dose of calomel.

Of the other measures of treatment, an important one is alkalinization of the urine. The dose of potassium citrate to be given for this purpose varies considerably. Generally one should begin with 60 grains if the patient is under 2 years old, and it will often be desirable to give double this amount. Occasionally 150 grains or 180 grains in the day have to be given before the urine becomes definitely alkaline and the temperature falls. Sometimes large doses set up diarrhea; and when this is the case the neutralizing effect on the urine is necessarily weakened. When the fever lessens under the treatment the other symptoms practically always improve.

Another drug to be used is calomel, the disinfectant action of which in the intestines apparently improves the state of the urine by lessening the number of bacteria leaking into it from the bowel. Salol, in doses of 2 to 4 grains, three or four times a day, is often helpful when added to the alkaline treatment, especially in the later stages. Hexamethylenamine and its various derivatives are ineffectual in most cases of colon-bacillus infection. John Thomson (Lancet, August 16, 1913).

DUODENAL ULCER, TREATMENT OF.

In very mild cases the author prescribes a light diet, rest abed for a week or two, and subnitrate of bismuth, with or without the addition of calcined magnesia. If conditions require it, the rest abed may be omitted and a more liberal diet then arranged.

In cases of a slightly more severe type, with frequent late gastralgia, hunger pain, and the occasional appearance of occult blood in the stools, the rest treatment abed is obligatory.

In cases with severe symptoms, *e.g.*, violent pains, vomiting, hematemesis or melena, absolute rest for the stomach and duodenum is required. Here rectal alimentation can be applied, especially in well-nourished individuals. If the enemas are not well tolerated or the patient is poorly nourished, duodenal alimentation should be instituted. The author has applied it for a period of two

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weeks in most cases of duodenal ulcer with good results.

The indications for surgical intervention in duodenal ulcer may be put as follows: Perforation requires immediate operation. Recurrent profuse hemorrhages (hematemesis or melena or both) endangering the life of the patient require a prophylactic interval operation. Frequent small hemorrhages, not influenced by rational treatment, and leading to an appreciable degree of constant anemia, demand operative intervention. Cases with constant continuous hypersecretion, accompanied by intercurrent ischochymia, not yielding to treatment, should likewise to operated. Severe pains, not influenced to a considerable extent by a repeated course of rational medical treatment, form a strong indication for operative measures. Max Einhorn (Medical Record, August 30, 1913).

ENURESIS AND CHRONIC DIGESTIVE DISTURBANCES.

The histories and symptomatology of over 50 incontinent children were studied by the author to determine in what degree disturbances of the digestive tract might be held responsible for the development of the symptom. Practically without exception, gross errors in feeding were noted, often dating from early infancy. Of 34 children that had been nursed, 20 had been so for abnormally long periods —15 for a year or longer, some as long as eighteen months. The histories invariably showed later dietetic errors, principally excesses in starches and sweets. The incontinence practically always occurred with other functional nervous disorders, local digestive symptoms, or a poorly nourished state and anemia. The frequent occurrence of adenoids might be considered part of the digestive catarrh.

The treatment tried out and advised by the author is as follows: A definite number of meals daily, given with absolute regularity, and separated by an interval long enough to insure complete digestion and the establishment of an appetite. Absolute abstinence from food between meals. A mixed diet containing green vegetables to stimulate peristalsis. The diet should be based upon the history of particular excesses and upon a study of the bowel movements to determine what particular food stuffs are at fault. Proper and thorough mastication. Good hygiene. Laxatives and intestinal antiseptics. Later, and only after a normal digestion is established, some easily assimilable preparation of iron may be administered to combat the anemia. Sedatives may be temporarily given early in the treatment to control the bladder. A fair percentage of cures was obtained by this method. F. Van der Bogert (Archives of Pediatrics, July, 1913).

EPIDEMIC DIARRHEA OF INFANTS, TREATMENT OF.

The condition discussed by the author is the zymotic enteritis appearing regularly each year during the hot weather of summer or autumn. In the treatment milk should be stopped, even on the rare occasions in which breast-fed babies are attacked, and replaced by albumin water. This is made by placing the whites of 2 fresh eggs in a cup, slightly beating them with a fork, adding a pint of cold (previously boiled) water, a little milk-sugar, and a pinch of salt and thoroughly mixing the whole by shaking in a bottle. In mild cases one may, as a rule, discontinue the albumin water after twenty-four hours, but in

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the severer types it is often necessary to persist with it for some days. It is quite permissible to put breast-fed infants back to the breast as soon as the albumin water has been stopped, but in the artificially fed one must interpose several intermediate steps, the author usually making 2 gradations in this respect, viz., (1) veal or chicken broth and (2) whey. This has appeared to minimize the risk of a relapse and in practice has worked excellently.

As for drug treatment, the author generally prescribes ⅙ grain (0.01 Gm.) of calomel at hourly intervals until 1 grain (0.06 Gm.) has been taken. This drug may be conveniently combined with sodium bicarbonate. If preferred, an initial dose of 1 teaspoonful of castor oil may be ordered.

For the diarrhea it is often of advantage to order the following mixture, to be given in teaspoonful doses every two hours the first day, four-hourly the second day, and three times during the third day, after which its administration is usually unnecessary:—

℞ Acetyltannin (tannigen), gr. xvj (1 Gm.).
Olei ricini, f3ss (2 c.c.).
Tinct. chloroformi comp. (B. P.), ♏xvj (1 c.c.).
Mucilaginis acaciæ, f3ij (8 c.c.).
Syrupi, f3j (4 c.c.).
Aquæ anethi (B. P.), q. s. ad f℥j (30 c.c.).
M. Sig.: One teaspoonful every four hours for a child 1 year old.

In many cases, when the diarrhea has become more chronic, the discharges are very offensive, and it is customary to prescribe a mixture with bismuth and salol:—

℞ Phenylis salicylatis, gr. iv (0.25 Gm.).
Bismuthi subcarbonatis, gr. xvj (1 Gm.).
Tinct. chloroformi comp., ♏viij (0.5 c.c.).
Mucilaginis acaciæ, f3ij (8 c.c.).
Aquæ anethi, q. s. ad f℥j (30 c.c.).
M. Sig.: One teaspoonful three or four times a day for a child 1 year old.

Another useful mixture for cases in which the feces are offensive is:—

℞ Zinci oxidi,
Sodii bicarbonatis, āā gr. viij (0.5 Gm.).
Aquæ anethi, q. s. ad f℥j (30 c.c.).
M. Sig.: One teaspoonful three or four times a day for a child 1 year old.

The administration of bismuth subgallate is often even better. One or 2 grains (0.06 or 0.12 Gm.) three times a day may be given to a child of 3 or 4, and the bismuth may with benefit be combined with chalk mixture.

Stimulation is necessary in many cases, but must not be practised as a routine measure. Brandy can be given with the albumin water, the quantity varying from 5 to 15 minims (0.3 to 1 c.c.) every two or three hours, according to the age of the child. Strychnine is also useful and, if it can be tolerated by the stomach, the following is a good combination for children:—

℞ Liquoris strychninæ (B. P.), ♏xij (0.75 c.c.).
Tincturæ strophanthi, ♏xxiv (1.5 c.c.).
Spiritus ætheris, ♏xl (2.5 c.c.).
Syrupi aurantii, f3iij (12 c.c.).
Aquæ chloroformi, q. s. ad f℥iij (90 c.c.).
M. Sig.: One teaspoonful four or six times a day for a child 1 year old.

Sometimes it may be necessary to give strychnine or ether by hypodermic injection, but care should be taken not to overdo stimulation.

To counteract the extreme collapse following excessive diarrhea, there is nothing better than the administration of normal saline solution either subcutaneously or by rectum. It is sometimes useful at the beginning of an attack to irrigate the large bowel with sterile water or normal saline.

Vomiting, if not checked by the starvation, may be treated by gastric lavage. This should not be repeated more than once, as in young infants it my occasion considerable collapse.

Good hygiene is essential. The in-

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fant should be in a room with free access of fresh air, and if possible, be taken out in the open air every day. When circumstances permit, the cot may be placed in the garden during the daytime. Diapers should be frequently changed, and soiled ones placed at once in some disinfectant solution, thoroughly cleansed in boiling water, then aired and dried before being used again. John Allan (Pediatrics, June, 1913).

EXOPHTHALMIC GOITERS, ACTION OF EXTRACT OF, ON BLOOD-PRESSURE.

From a study of the effects of intravenous injection of extracts of human exophthalmic goiters on the blood-pressure in the dog, using only fresh glands having a parenchymatous hypertrophy and hyperplasia of cuboidal to columnar epithelium, and with little or no stainable colloid material (low iodine content), the authors conclude that a powerful depressor substance exists in these goiters. A primary injection establishes tolerance to the action of further injections. Atropine does not inhibit the action of the substance. This substance does not behave physiologically like choline. Its action takes place chiefly through peripheral vascular dilatation aided by some diminution in cardiac output. Irritability of the vagus is not decreased. The existence of a crossed tolerance between the depressor action of extracts of exophthalmic goiters and of blood-serum from patients with exophthalmic goiter suggests that the substances active in these two products are the same. J. M. Blackford and A. H. Sanford (Medical Record, August 30, 1913).

FISTULA IN ANO, TREATMENT OF.

When much pus is being discharged, or a large abscess is present, an operation for fistula in ano should not be performed. The proper treatment is to insure free drainage, if necessary by enlarging the existing openings for the purpose, and to have the tracks and pockets frequently irrigated with hydrogen peroxide, or some other suitable antiseptic solution. Frequent fomentations and hot baths will also assist. All this saves time in the end, as it much reduces the size of the wound required at operation. P. L. Mummery (Lancet, July 12, 1913).

GASTRIC CANCER, SURGERY OF.

Gastric cancer cannot often be diagnosed early enough to obtain a radical cure by operation, but the diagnosis of a surgical condition can be made in time to permit operative interference in more than one-third of the cases (378 out of 1000). The most important signs are tumor, obstruction—if shown only by food remnants—and the evidence of the Röntgen ray. A combination of the tumor and obstruction is nearly pathognomonic in a case otherwise suspicious.

Cancers of the body and fundus of the stomach occur in 25 per cent. of all cases. When located at the cardia, these growths produce early obstruction, but are not as yet surgically removable. In the body of the stomach few can be diagnosticated sufficiently early to permit operation, because they are situated behind the margins of the ribs, where a tumor cannot be palpated until a late stage, and, because of the wide gastric lumen, obstruction is a late development.

Comparison of the records of 1000 cases of gastric and duodenal ulcer operated on within the last six years with a like number of cancer cases bore out the accepted hypothesis that low acidity and especially the low HCl constant is indicative of gastric cancer. Cancerous stomachs always contained some acid, though the free hydrochloric was often

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absent. Occult blood in the stools is the rule, but its value as a positive sign is not great. The gastroscope has not been yet perfected for practical work. History of previous gastric disorders was obtained in most cases.

Every operation for gastric cancer should begin as an exploration. Under present conditions the patient who is submitted to exploration with a probable diagnosis of cancer of the stomach has a little over 1 chance in 3 of a radical operation, a little less than 1 chance in 3 of a palliative operation, and about 1 chance in 3 that the operation will be merely an exploration. The exploratory operation is not free from danger if the disease is advanced. The Mayos have had 6 deaths in 376 purely exploratory incisions, which, however, could not themselves be blamed. It is their custom to make first a small incision admitting two fingers, which can at once be closed if, as in a certain proportion of cases, it shows operation to be inadvisable or useless. In many cases, however, this is inadequate for a thorough exploration.

With our present means of diagnosis, cancer of the pyloric end of the stomach can be recognized sufficiently early to perform a radical operation in at least half the cases. The mortality is about 10 per cent., depending largely on the class of cases accepted for operation. If an early diagnosis has been made and the patient is in good condition, the mortality will be less than 5 per cent. There is a prospect of a five-year cure in about 25 per cent., and of a three-year cure in 38 per cent., of those who recover from the operation. Comparatively few patients who recover following resection fail to get more than one year of relief. W. J. Mayo (Journal of the American Medical Association, August 23, 1913).

GASTRIC HYPERACIDITY, BILE IN TREATMENT OF.

Bile has been shown by the author, both clinically and experimentally, to diminish the acidity of the gastric juice and inhibit peptic activity. In view of the irritating effect and possible corrosive action of the gastric juice in gastric ulcer, he was led to try bile therapy in this affection, with gratifying results. Sodium cholate, 0.2 Gm. (3 grains), made into an emulsion in an equal amount of oil and inclosed in a gelatin capsule, was the usual mode of administration; 0.1 Gm. (1½ grains) of cholic acid was also sometimes used. In 33 cases thus treated, including some of other affections besides gastric ulcer, considerable benefit was often noted. In some of the patients a complete cure of hyperacidity and the gastric disturbances dependent upon it appears to have been obtained. K. Glässner (Wiener klinische Wochenschrift, September 25, 1913).

HEMOPTYSIS, EMETINE IN.

Striking results are reported by the author from subcutaneous injection in the flank or thigh of 0.04 Gm. (⅔ grain) of emetine hydrochloride dissolved in 1 c.c. (16 minims) of water. In 20 cases of hemoptysis thus treated the bleeding was constantly and immediately arrested. No unfavorable accompanying effect was observed, with the exception of temporary local pain in the most sensitive individuals treated. In the more severe cases bleeding may recur some time after the first injection, and the author therefore now repeats the measure in twelve hours, again the next day, and, if necessary, on the fourth and fifth days. In some cases the emetine acted so thoroughly that soon after the injection there was no longer a trace of blood in the sputum.

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In only 1 case, and that of galloping tuberculosis, did the drug not produce permanent arrest of the bleeding. The *modus operandi* is obscure, the blood-pressure, coagulability and cell counts remaining uninfluenced. C. Flandin (Presse médicale, September 24, 1913).

HEMOPTYSIS, SALINE INFUSION IN.

Gratifying results from saline infusion in 50 cases of hemoptysis are reported by the author. He injects intravenously 5 c.c. (80 minims) of a 10 or 15 per cent. solution of sodium chloride. Such injections cause no pain and are entirely innocuous. In cases with slight or moderate bleeding, in the predominantly fibrotic form of lung tuberculosis, the hemoptysis is always arrested by the measure. Where over 100 c.c. of blood has been lost it occasionally fails, but is well worth trying in every case. In 21 of the 50 cases treated the tendency to hemorrhage was permanently overcome; in 14 other cases, bleeding was checked at once, but recurred in a few days; in 4 patients the hemorrhage taking place at the time was not stopped, but the tendency to later hemorrhage apparently removed; in only 5 cases did the measure completely fail to bnefit. After a hemorrhage has been arrested by the saline infusion the author gives a second and possibly a third injection in the course of the day for the purpose of preventing recurrence. The measure is considered by the author to act by osmosis, the concentrated salt solution causing an exchange of fluids between the blood and the tissues which probably mobilizes substances favoring coagulation. The maximal effect develops in twenty minutes, after which it subsides in the course of an hour. H. Müller (Beiträge zur Klinik der Tuberkulose, Bd. xxviii, Nu. 1, 1913).

HEMORRHAGE, TREATMENT OF.

The author recommends an intravenous injection of 200 c.c. of a 5 per cent. solution of glucose to arrest severe bleeding where direct surgical methods are not practicable. In abundant intestinal hemorrhage in typhoid fever even a 20 per cent. solution may be used to advantage. The infusion is repeated as often as required and is not followed by a rise of temperature or other untoward phenomena. The physiological effect is the same as that of the hypertonic salt solutions which have for some time been recommended in severe bleeding. It seems that the tension of the blood in its relation to the tissues is so changed that a large amount of hemostatic ferment is given off by the latter. In hemophilic conditions the author has injected 200 c.c. of a 10 per cent. solution with good results. Instead of the glucose, cane-sugar may also be employed. In diabetes caution is necessary. Sugar solution is in many instances preferable to salt solution in that a certain amount of food is introduced into the body with it. E. Schreiber (Therapie der Gegenwart, May, 1913).

HIP, TREATMENT OF CONGENITAL DISLOCATION OF.

Adductor tenotomy weakens the anterior support to the hip-joint, favoring an anterior transposition of the femoral head, and should be resorted to rarely.

Koenig's padded wedge as a fulcrum is a dangerous instrument, favoring fracture of the femur, pressure paralysis of the sciatic nerve and bruising of the soft parts, and should never be used.

Pounding the adductor muscles loose from the pelvis with the fist or edge of hand favors anterior crural paralysis, fracture of the pelvis, and breaking of the skin, which may lead to deep sloughs and

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destruction of a large area. This method should be discarded.

Well-developed children over 6 years of age, with two or more inches of shortening, should have several weeks of extension treatment before reduction is attempted.

Reductions should not be undertaken in children under 3 years of age because of the difficulty encountered in keeping them clean and the greater dangers of injury to the delicate structures in and about the hip-joint. Reduction by manipulation in cases over 10 years of age, with well-developed muscles and more than two inches of shortening, should not be undertaken and is attended with greater danger than the open operation. C. L. Washburne (Physician and Surgeon, July, 1913).

INTESTINAL MOTILITY, EFFECTS OF DRUGS ON.

This question was studied by the author in rabbits, the intestines being removed from the body, kept under physiological conditions of temperature, isotonicity, oxygenation, etc., and the drugs under consideration added to the Locke solution which was being perfused through the mesenteric vessels. Dilute hydrochloric acid, sodium bicarbonate, barium chloride, sodium sulphate, aloes, senna, calcium chloride, cascara, rhubarb, castor oil, and phenolphthalein were each found to enhance the contractions of the small intestine, acting with about the same intensity whether placed in the lumen of the gut or added to the perfusion fluid. On the other hand, magnesium sulphate, opium and its derivatives, belladonna, and chloroform water were found to paralyze the intestinal movements. Substances that excite peristalsis act in various different ways. Their action is not limited to the intestine alone, some of them, such as sodium sulphate and senna, causing the formation of peristaltogenous substances which, discharged into the blood-stream after the manner of hormones, become diffused throughout the system and excite intestinal contractions. The blood-serum and extracts of organs of animals purged before death with sodium sulphate or senna cause a distinct increase in peristalsis when perfused through the isolated intestine. Motion pictures and the introduction into the intestine of starch paste colored with carmine were among the methods employed by the author for studying in detail the peristaltic movements and the progression of the intestinal contents under the influence of the various drugs. Roger Glénard (Thèse de Paris; Lyon médical, October 5, 1913).

INTUSSUSCEPTION IN INFANTS, SYMPTOMS OF.

The author points out that time lost in waiting for a sausage-shaped tumor to be palpable or for the intussuscepted gut to appear in the rectum may be sufficient to cost the life of the little patient. With the small gut distended palpation of the cecum may be impossible. There may be an intussusception so small that no mass is palpable, or the whole mass may be hidden behind the ribs in the splenic flexure of the colon. For the intussuscepted loop of gut to present itself in the rectum there must be a length of gut twice as great as that of the entire large intestine, and the drag on this loop produces the great shock seen. In the cases seen early, when treatment is most efficacious, the mass in the rectum is rarely met with. In the last 5 cases that the author has seen no intussuscepted gut was present in the rectum. With a history of sudden onset of

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screaming, intractable vomiting, evidence of continuous pain and blood and mucus in the stool, with an absence of fecal matter in the stool, a diagnosis of intussusception, particularly in infants under a year, may be safely made. There need be no great prostration at first and this is the ideal time for operation. The X-rays are available for diagnosis in the doubtful cases. L. Miller Kahn (Medical Record, September 20, 1913).

LUPUS VULGARIS, TREATMENT OF.

In a case of lupus vulgaris of the face, with constant discharge of a large amount of pus through many sinuses and fissures, the author applied 3 c.c. of Lugol's solution in combination with 0.5 c.c. of old tuberculin of 1:100 dilution in 50 c.c. of a saturated saline solution, by means of a piece of lintine previously cut to fit the entire infected surface—including a caseous gland—and over this molded a black tin electrode, 18-gauge, cut so as to leave a margin of about one-half inch of lintine showing from beneath it. A galvanic current of 15-milliampère strength was allowed to flow through the anterior or negative electrode—the positive forming the posterior electrode—for one-half hour, and the current then raised to 20 milliampères for another half-hour.

The positive electrode was placed on the right side of the neck and similarly prepared, save that the lintine was moistened only with a saturated salt solution, the intention being to drive the electrolyzed iodine and tuberculin ions in combination through the tissue at an angle from pole to pole—a distance of about two and one-half inches. Three treatments only were given, at intervals of two days and a week respectively, but the current was raised to 30 milliampères in the last half of each hour's treatment at the last 2 sittings.

Pronounced benefit was obtained, cicatrization being about complete thirty days after the first treatment. The tuberculous neck gland had entirely disappeared.

Similar treatment consisting of the application of 4 c.c. of Lugol's solution and 1 c.c. of 1:100 dilution of old tuberculin, in 75 c.c. of saturated salt solution, by means of large electrodes placed over the chest and back, led to very rapid complete recovery in a case of pulmonary tuberculosis.

Each of the three treatments given in this case lasted an hour and a half, and 35 milliampères of a galvanic current were used for the first half-hour, the current being then reduced to 20 milliampères.

The electrodes were made by molding large sheets of softened electrotyper's wax over the thorax and back of a thin living subject, then chilling the wax by means of ice-water compresses, covering the wax concave surfaces with graphite, and then placing the wax forms in an electrotyper's vat and thus depositing copper shells on them. W. J. Manning (Virginia Medical Semi-Monthly. October 10, 1913).

MALARIAL INFECTION, TREATMENT OF RELAPSES IN.

Observation has convinced the author that Huxham's tincture of cinchona bark, 1 dram every two hours, diluted, will cure cases of malarial relapse and chronic malaria in which quinine is inert. It will also, he believes, prevent relapses. In addition, he has had good results from a pill of reduced iron, 1 grain; arsenic, $\frac{1}{60}$ grain, and quinine, 2 grains. He has noticed repeatedly that the provisional use of Warburg's tincture, or extract, is very valuable when other means have failed. It is probable that by reason of the aloes and rhu-

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barb in Warburg's tincture, or extract (with aloes), the liver and bowels are favorably affected, especially if there be a tendency to constipation. Beverley Robinson (Merck's Archives, September, 1913).

MESOTHORIUM.

The utility of mesothorium in the treatment of skin cancers, especially those of restricted dimensions, is emphasized by the author. Mesothorium possesses very much the same properties as radium and is much less expensive. The dose used is 4 to 20 milligrams, and the duration of application one-quarter to one and a half hours. Excellent results were obtained by the author with mesothorium in the treatment of 40 cases of cutaneous epithelioma. Nobl (International Medical Congress, 1913; Presse médicale, August 30, 1913).

MUMPS, BLOOD AND CEREBROSPINAL FLUID IN.

The blood in mumps shows definite changes in the corpuscular content consisting (*a*) in a slight increase in the total number of leucocytes, and (*b*) in a lymphocytosis which is both relative and absolute. The lymphocytosis is present on the first day of the disease and persists for at least fourteen days. The occurrence of orchitis does not invariably alter the blood-picture. The blood changes are of distinct diagnostic value in differentiating mumps from other inflammatory swellings of the parotid or submaxillary salivary glands and from cases of lymphadenitis. A lymphocytosis of the cerebrospinal fluid occurs when mumps is complicated by meningitis or by lesions affecting the cranial nerves. It has, however, also been found in cases of mumps which have presented no clear clinical symptoms of any organic lesions of the nervous system. From a consideration of the blood and cerebrospinal fluid, one is justified in assuming that the virus of mumps excites an inflammatory reaction, the characteristic feature of which is a great aggregation of lymphocytes. A. Feiling (Lancet, June 12, 1913).

MUMPS, PROPHYLAXIS OF.

From observations in several hundred Italian soldiers the author has become convinced that epidemic parotitis is always preceded by an epidemic pharyngitis, of which the parotitis is merely a complication. The relationship between the two conditions is considered by him similar to that existing between enteritis and hepatic abscess in tropical countries. The author's experience showed that upon this basis, prophylaxis of mumps can be readily effected. As soon as a case of mumps presents itself he applies pure tincture of iodine to the pharynx and buccal mucous membrane, with special attention to the gingival fold and the opening of Steno's duct. The patient is required also to keep constantly in the mouth a tablet of potassium chlorate. The iodine applications are made every morning throughout the course of the disease. With these precautions the patient is allowed to mix with his comrades in the barracks, though each of them, perhaps already in the incubation period at the time, is subjected to the same treatment for four successive mornings. G. L. Petrilli (Policlinico, June 1, 1913).

OVARIAN GRAFTING, AUTOPLASTIC.

The following conditions are regarded by the author as essential to the success of a grafting operation: (1) Absolute asepsis and the avoidance of strong antiseptics which would destroy the vitality

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of the tissues. The apparent contraindication to this in the case of chronic pyosalpinx and salpingo-oöphoritis is met by the fact that the pus in such cases is usually sterile, and the tissues may be treated as surgically clean. (2) The employment of minute or "seedling" grafts. (3) The presence of a good vascular supply in the tissue used as the bed for the graft. Muscle is entirely satisfactory for the purpose. (4) The ovarian tissue should be left in contact with the body fluids within the peritoneal cavity until it is required for the grafting. In the case recorded in the author's paper the ovary was placed in Douglas's pouch until the time arrived for closure of the abdominal wound.

An important use for the grafting operation is as a conservative measure when it is necessary in a young woman to remove uterine appendages for old-standing inflammatory disease, without having to sacrifice the uterus. Another possible indication is that of transplanting fragments of ovarian tissue in cases of severe dysmenorrhea, where, in performing oöphorectomy, it might be possible to bring about a cure without at the same time unsexing the patient. B. Whitehouse (British Medical Journal, September 27, 1913).

PARTIAL CHRONIC ADRENAL INSUFFICIENCY IN CHILDREN.

The author points out that there may occur in childhood, either spontaneously or as a sequel of some acute disease, slightly marked but persistent disturbances which at length react seriously on the general state and growth of the child and which are due to partial insufficiency of the adrenal function. In very young children thus affected, development in weight and height is at a standstill, the muscles are flabby, walking is delayed, and the child is apathetic and at times somnolent. Adrenal therapy or the simple administration of small doses of epinephrin bring about more or less rapid cessation of these manifestations. In somewhat older children retarded growth in height is the most marked phenomenon. In boys, before puberty, there is noted a condition of apathy, fatigue, and physical and mental indolence. The child grows thin and the blood-pressure is low. Administration of adrenal preparations under these conditions renders the boy more alert and leads him to work better and suffer less fatigue; the blood-pressure rises and the body weight and stature augment in a few months. Manifestations such as those described may, of course, be due to other conditions, but the benefit accruing from adrenal therapy in many cases would seem to indicate a specific deficiency on the part of the corresponding organs. D'Œlsnitz (International Medical Congress, 1913; Presse médicale, September 13, 1913).

PHOSPHORUS IN PULMONARY TUBERCULOSIS.

In over 100 cases of tuberculosis the author has administered phosphorus and the results, in all but 3 cases, were such as to lead him highly to recommend its use in this disease. The formula generally prescribed was as follows:—

℞ Calcii hypophosphitis, ʒss-ij (2-8 Gm.).
Tincturæ phosphori (1:1000),
Liquoris arseni iodidi (1:100), āā f℥ss-ij (2-8 c.c.).
Syrupi ferri iodidi, ℥ss-j (15-30 c.c.).
Aquæ, q. s. ad ℥vj (180 c.c.).
M. Sig.: One dessertspoonful four times a day after food and at bedtime, in water.

[The phosphorus tincture is prepared by dissolving phosphorus in warm chloroform and then adding absolute alcohol till the phosphorus is diluted to 1 part in 1000.]

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Where iodine was not tolerated it was deleted from the formula. The approved methods of rest, graduated exercise, sleeping in the open air, and the diet, were included in the treatment, but the phosphorus appeared to have a special action of its own. Expectoration was copious for two to ten weeks after the beginning of treatment; but after this there followed a rapid diminution of the sputum, with consequent hardening of the cough, until finally the expectoration ceased entirely. While directed mainly to tuberculosis of the lungs, the phosphorus treatment was also administered in tuberculous disease of the glands and joints, in which it brought about great improvement.

The administration of phosphorus in acute pneumonia, both lobar and bronchial, proved very successful in the author's hands. Among several hundred patients treated by it there was not a death except in the case of one patient who suffered from hepatic cirrhosis. The formula generally used for pneumonia was:—

℞ Tincturæ phosphori (1: 1000), ℥ss-j (2-4 c.c.).
Liquoris ammonii acetatis, ℥j (30 c.c.).
Spiritus ætheris nitrosi, ℥ss (15 c.c.).
Aquæ, q. s. ad ℥vj (180 c.c.).

M. Sig.: Dessertspoonful hourly for six doses; at alternate hours for six doses; then every three hours till crisis.

Additional measures used were strychnine injections, alcoholic preparations, and kaolin cataplasms applied locally. During convalescence, particularly after bronchopneumonia, the phosphorus formula as given for tuberculosis is often administered.

In acute and chronic bronchitis phosphorus was also found a valuable agent when added to bronchitic mixtures. In the acute stage it soon brings about a breaking down of the hard, useless cough, and, as a rule, within twenty-four hours the cough becomes soft and the sputum profuse, while the second stage is considerably shortened and patients are well long before they would be if under ordinary treatment. In chronic bronchitis the patients given phosphorus soon attain a state of partial or actual freedom from the disease. The drug seems to act in a direct manner on the lung itself, as cases troublesome and stubborn in their reaction to ordinary treatment show marked improvement in a very short time. Ferguson Lemon (New York Medical Journal, August 16, 1913).

PITUITRIN IN OBSTETRICS.

After experiences with pituitrin in 49 cases of labor—to hasten the termination of labor that had begun—the author is led to emphasize the fact that pituitrin is a powerful drug and that care should be used in its administration. It should never be used until the accoucheur is familiar with his case and sure that no harm will result from its use. It is absolutely contraindicated where there is a disproportion between the size of the fetus and that of the pelvis, or where there is obstruction. Instead of pituitrin, rest is indicated where the uterus is exhausted. As the drug acts best toward the termination of labor, and only slightly at the beginning, the time to use it is when dilatation of the cervix is complete or nearly so. Then the man in a hurry may use it instead of applying forceps, as is too frequently done. The intelligent use of this extract at the proper time should displace the forceps very often. The result should be lower mortality, less morbidity among the newborn and mothers, and less suffering of the mothers. After the injection has been given, the physician should never leave his patient until labor is complete, for fear of precipitate labor; also, the

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case should be watched for possible trouble. W. E. Welz (Journal of the Michigan State Medical Society, September, 1913).

PROSTATIC OBSTRUCTION, RELIEF OF.

Two cases of prostatic obstruction were relieved symptomatically and objectively by the author with high-frequency current cauterization of the obstructing portion of the prostate. The residual urine in the first case—one of contracture of the vesical neck—was reduced from 26 to 1½ ounces; in the second, a middle lobe case, from 14 to ½ ounce. The treatments were conducted in the office, and were not followed by pain or serious bleeding. The patients received such complete relief as to warrant the conclusion that this agency must be considered as a possible means of treatment in dealing with certain types of prostatic obstruction—not the uniformly large prostates, but those where the offending part is localized and at the vesical neck; cases which are not relieved by prostatectomy or do not require this operation. Constriction of the vesical neck, median bars or lobes, and single lobes projecting into the bladder or urethra from any other portion of the prostate, may probably also be efficiently treated by high-frequency cauterization. While this method, as the author has used it, requires repeated application and hence would be feasible chiefly for patients tolerating the cystoscope well, it does not involve a skin incision, has not caused subsequent hemorrhage of any consequence, does not interfere with work, and does not require residence in a hospital. Probably the d'Arsonval current would accomplish results in such cases more quickly, but one must be cautious to avoid too deep destruction of tissue. With the Oudin current, according to the author's experience, he would be willing to do more at each sitting; fewer cystoscopies would thus be required. A. R. Stevens (New York Medical Journal, July 26, 1913).

PUERPERAL STREPTOCOCCEMIA, MAGNESIUM SULPHATE TREATMENT OF.

The author has employed magnesium sulphate intravenously in 9 cases of the severer type of puerperal infection. Bacteria had been demonstrated in the blood of 5. A 2 per cent. solution of chemically pure magnesium sulphate was prepared with freshly distilled water. This was filtered and sterilized in ½ liter flasks in an autoclave. This solution will not hemolyze human red blood-cells, nor cause any temperature reaction in the patient. Magnesium sulphate was found of more value early in the course of the infection than after secondary localization had occurred. In the chronic cases of secondary thrombophlebitis or pyemia it did not appear to be of benefit. Its action was chiefly upon the organisms circulating in the blood. It shortened the course of the bacterial toxemias in which the bacteria could not be demonstrated in the blood by culture, and anticipated the establishment of a bacteriemia. It reduced the mortality in puerperal bacteriemia, especially in streptococcemia, the most fatal form of puerperal infection, from 93 per cent. to 20 per cent. J. A. Harrar (Medical Record, October 18, 1913).

RACHITIS AND TUBERCULOUS PERITONITIS, DIFFERENTIAL DIAGNOSIS OF.

The author calls attention to a physical sign which has proved very helpful to him in differentiating abdominal enlargement associated with rachitis from that of tuberculous peritonitis. Whereas

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in rachitis the greatest prominence of the abdomen is at the epigastrium, in tuberculous peritonitis the abdominal circumference is largest at or below the umbilicus (hypogastrium). This differential physical sign can best be elicited by careful measurements of the abdominal circumference by means of a tape measure, but can readily be determined also by mere inspection. It can be explained by the fact that in tuberculous peritonitis the inflammatory exudate accumulates at the bottom of the abdominal cavity and thus distends the surrounding abdominal wall. To make correct use of the sign, however, one must be sure to exclude large dermoid cysts of the ovary and an overdistended bladder, both of which are apt to lead to diagnostic errors. Herman B. Sheffield (Medical Record, August 30, 1913).

RECTAL FISTULA, NEW OPERATION FOR.

A method of operating on fistula without cutting muscular tissue is described by the author. The procedure is employed in cases with fistula which involve the sphincter muscle. An incision is made external to the sphincter, similar to that made in incising an ischiorectal abscess. Through this opening the scar tissue is dissected out up to the internal opening. An incision is then made at the skin margin, so that the middle of this incision passes through an imaginary longitudinal line drawn from the internal opening. A submucous dissection is then channeled out up to the internal opening. Gauze drainage is kept in this until the external wound has healed sufficiently. Then the submucous tract which remains is incised under local anesthesia. No muscular tissue having been cut, the function of the sphincters is preserved intact. R. H. Barnes (Transactions of the American Proctologic Society, June, 1913).

RETROPHARYNGEAL ABSCESS, ACUTE.

The use of a properly fitting mouth gag and the index finger of the right hand is the only reliable means for making a thorough examination in these cases. One can thus not only feel the fluctuating tumor, but distinguish it from other tumors, such as prominent cervical vertebræ and osteoma, as well as feel any pulsation present.

Having made the diagnosis by palpation, immediate opening of the abscess is imperative. The method of the authors in operating on these cases is as follows: No anesthetic. The child is wrapped snugly in a sheet. The nurse (standing) holds the child with the head downward, with its lower extremities over her shoulder. An assistant then introduces the mouth gag. With a central location of the abscess it makes little difference upon which side of the mouth the gag is introduced, but should the bulging be lateral the gag is introduced on the opposite side. The operator now introduces his left index finger as a guide, and with the sharp elevator of a Killian submucous set in his right hand, tears through the abscess wall for about an inch or an inch and a half at its most prominent part. Considerable force is sometimes necessary to penetrate to the abscess cavity with this rather dull instrument, but if one used a bistoury the wound would close too rapidly so that sometimes a secondary operation to reopen the cavity would become necessary. Since using the tearing method the authors have never had to reopen the abscess cavity. The child is held in the inverted position until all the pus is thoroughly drained, after which the mouth is kept clean with mild alka-

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line washes used frequently, especially before and after nursing. Treated in this manner, the relief is prompt and the child falls asleep almost immediately.

Sometimes children become cyanosed and stop breathing just when one is about to open the abscess. When this occurs immediate removal of the mouth gag is indicated, as the back part of the tongue is being crowded back upon the abscess, thereby shutting off the air supply. A broad-bladed tongue depressor is introduced between the teeth instead and the operator then proceeds as before. I. H. Alexander and H. Montague (New York Medical Journal, August 2, 1913).

STASIS REACTION IN ARTERIOSCLEROSIS.

Upon undertaking researches on the effect on the blood-pressure of shutting off the circulation of one or more limbs from that of the general system, the author was struck by the difference existing in this respect between the reaction in normal individuals and that in arteriosclerotics. When, with the subject in recumbency, one excludes the circulation in both lower and one upper extremity with ordinary blood-pressure cuffs, and then measures, in the remaining arm, the blood-pressure, the latter is found to rise, in the case of a normal circulatory system, by 5 mm. of mercury, whereas in cases of arteriosclerosis the difference may amount to 60 mm. and even more.

The cause of this difference is considered by the author to be that the sclerotic vascular system has lost the power to undergo compensatory dilatation in its uncompressed portions. The fact that the abnormal rise of pressure does not take place to a like extent in all cases of arteriosclerosis, but varies according to whether the sclerotic process is general or partial, and also according to the particular vascular area involved, would seem to support this view. In any case, the production of the marked rise of pressure described should always be considered evidence of a pathological condition of the arterial walls. Observation of it demands the greatest caution in the employment of all therapeutic procedures which, like cold affusions, light baths, etc., tax to a great extent the regulatory functions of the vascular tree. C. Hertzell (Berliner klinische Wochenschrift, March 24, 1913).

SUPPURATIVE FOCI, TREATMENT OF.

Small incisions and the injection of an iodine-containing compound incorporated in petrolatum are the essential features of the plan of treating venereal buboes and other forms of glandular abscess, phlegmonous processes, and periostitis, advocated by the author. The mixture injected consists of 1 part of vioform (iodochloroxyquinolin) in 4 parts of neutral sterilized petrolatum, and is heated on a water bath to 45-60° C. before use. The procedure followed consists in first painting the area with tincture of iodine, instituting ethyl chloride local anesthesia, next making a stab incision with a scalpel-blade only 5 mm. broad or a large trocar, evacuating the pus cavity as completely as possible, washing it out with hydrogen dioxide solution until the latter returns perfectly clear, and finally filling the cavity with the melted ointment by means of an ordinary glass syringe, previously heated with warm water. The opening is then sealed with round pieces of gauze and collodion, which are removed only four or five days later. Where it has not been possible completely to empty the pus cavity, however, a large, square piece of

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vioform gauze is placed over the opening instead of the occlusive dressing. Next, the walls of the abscess cavity having lost their sensitiveness, the cavity can be thoroughly evacuated by pressure without causing pain. After cleansing the margins of the little incision with alcohol, melted ointment is again injected and a dressing applied. In three to four days, as a general rule, recovery will have followed. In the case of buboes, complete rest in bed should be advised, but this is hard to secure, as even before the dressing has been applied pain has disappeared. This method has been employed by the author for three years, with uniformly excellent results. No scar remains at the site of infection. C. Gabriel (Progrès médical, May 10, 1913).

SYPHILIS, CARDIAC INVOLVEMENT IN.

Symptoms of cardiac involvement are manifest in a large percentage of cases of syphilis, as the authors had occasion to observe in a careful study of 200 cases. The symptoms of luetic heart disease may appear very early in the secondary stage, though most frequently not discovered until the tertiary period, largely because the patient attributes all his symptoms to the general disease and special visceral signs are neglected.

The signs are those of an essential cardiac lesion, but differ from those of idiopathic or simple cardiac cases in that there is a greater tendency toward the involvement of the heart muscle and the coronary arteries. Precordial pain is probably the most constant symptom, and one of the earliest. In a high percentage of cases this takes on a definitely anginal character. Dyspnea, cyanosis and other usual signs of heart incompetence are customarily present long before true incompetence is evident. In so far as the endocardium is concerned, the greatest number of cases show combined mitral and aortic lesions; after these, those of the aortic ring predominate.

Recognition depends primarily on the diagnosis of lues and the association of a cardiac defect, either of definite or supposititious nature. The recognition of the nature of the general infection depends on, named in the order of their relative value, the Wassermann reaction, the presence of associated lesions of probable syphilitic nature, and finally, on the history of this infection. The most conclusive diagnostic test is the therapeutic one. Harlow Brooks and J. H. Carroll (New York State Journal of Medicine, June, 1913).

TUBERCULIN TESTS, PRESENT STATUS OF.

Barring children under 5 years of age, in whom he has had but little experience with these tests, the author summarizes his views as follows: The Moro test, from a clinical point of view, is so unreliable that it is a waste of time to apply it. The subcutaneous injection of tuberculin is the most reliable from the scientific viewpoint, but clinically is not absolutely reliable, even when negative. Severe reactions in a considerable number of cases are unavoidable, and may cause irretrievable harm; it is therefore not justifiable to employ this method as a diagnostic routine. The Calmette test is probably harmless when applied with unfailing care in the choice of cases; but since it is capable of doing injury to the eye, and seems to present no advantage over the von Pirquet test, it should not be employed routinely. The von Pirquet test is undoubtedly harmless, and is the only one to which the author can see no objection for routine use, though it is of very little practical value beyond the

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age of five years. In some rare cases, where the diagnosis cannot be reached by any other means and yet, for the patient's interest, it is imperative either to affirm or disprove the presence of tuberculosis, it is justifiable to apply, cautiously, the subcutaneous injection of tuberculin for diagnosis. This applies especially to disease of the joints, where the focal reaction can be more easily observed. C. B. Slade (Medical Record, June 14, 1913).

TUBERCULOSIS, TREATMENT OF.

Gratifying results from the administration of calcium cacodylate and calcium iodide are reported by the author. The preparation of the latter he now uses contains to the fluidram, calcium iodide (pure CaI_2, not iodized lime) 10 grains, and ferrous iodide, 1½ grains, dissolved in glycerin. The calcium cacodylate was prepared in sterile solution and placed in sterile ampoules containing ¾ grain each, thus facilitating hypodermic administration. The results obtained were found more satisfactory than from the use of sodium cacodylate. Daily intramuscular injections of calcium cacodylate, ¾ grain, are administered for one week, and after the first week injections are given every other day for a period of four or five weeks or longer, unless contraindicated by some unusual development. The glycerolate of calcium and ferrous iodides (the first preparation) is begun at the same time, 30 minims (equivalent to 5 grains of calcium iodide) being given in water three times daily after meals, gradually increased to 1 dram. If given before meals on an empty stomach, it increases the appetite.

In incipient cases of tuberculosis (including the pulmonary and the surgical type), in which the results have been most promising, the author persists in the treatment until the case clears up, and even thereafter continues occasional medication. In acute miliary tuberculosis the result of the treatment was *nil*. In mixed infections some improvement was noted.

In incipient pulmonary cases the patients showed improvement marked by increased weight, cessation of cough and night-sweats, as well as an increased percentage of hemoglobin. Patients kept under observation show no signs of return of the active symptoms of the disease. In surgical patients who underwent operation the treatment seemed to hasten recovery and healing of sinuses. A. B. Jackson (New York Medical Journal, May 24, 1913).

TUBERCULOSIS, TREATMENT OF COUGH IN PULMONARY.

Acetylsalicylic acid (aspirin) is recommended by the author as a remedy to relieve cough in tuberculosis. He frequently advises patients in an advanced stage of the disease to take 5 or 10 grains (0.3 or 0.6 Gm.) of the drug about 8 P.M., when they are troubled with excessive cough at night. The smaller dose is often sufficient to control the cough and is not so liable to cause a night-sweat as is the larger dose. The author suggests that this drug be given a trial before resorting to the use of opium or its derivatives in cases in which local treatment of the nose, pharynx, and larynx, or postural treatment, is not successful. J. D. Blackwood, Jr. (Journal of the American Medical Association, July 5, 1913).

TUBERCULOSIS, TUBERCULIN TREATMENT IN.

The author gives a positive answer to the question: Can tuberculin be given

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safely by the careful general practitioner who has had little or no personal experience with its use? The following rules must, however, be observed: The initial dose must be extremely minute—not over one-millionth of a milligram. Patients with fever should not begin on more than one-ten-millionth of a milligram. When the disease is active the first dose should not exceed one-hundred-millionth of a milligram, or one-billionth of a milligram.

One must observe and question the patient closely for signs and syptoms of a reaction, both on the day tuberculin is given and on the succeeding days. The patient should keep a temperature record. Any of the following signs and symptoms are to be regarded as evidence of reaction: Rise of temperature above the curve of the previous few days; râles over the pulmonary lesion that were not present before; loss of or diminution in appetite; appearance of or an increase in headache or malaise; increase in cough, expectoration or hemoptysis; appearance of blood in sputum previously free from it; occurrence of or increase in weakness; appearance of or increase in pain or ache in the chest or anywhere in the body; sleeplessness, nausea, loss of weight, hoarseness, aggravation of an aphonia, etc. Any marked redness, edema, or pain at the site of the injection is evidence of a reaction.

The interval between doses should at first be five to seven days. There is no necessity of increasing the dose that seems to do good. A dose causing moderate reaction should be reduced one-tenth, the administration being withheld until all symptoms of the reaction have passed away. Should a marked reaction occur, the treatment should be suspended for at least a week after the disappearance of the signs of the reaction and the tuberculin then given in a dose one-hundredth to one-thousandth of that previously given. The increase in dose should be gradual, not exceeding 33⅓ per cent. of the preceding dose. The percentages of increase should also be fairly equal.

The oral, hypodermic, and intramuscular routes of administration seem equally efficacious. The author prefers giving tuberculin by mouth because it is less troublesome, avoids the possibility of infection, keeps the patient in ignorance when desirable, and chiefly because the patient can administer the tuberculin to himself. A patient kept on the same dose of tuberculin which has proven satisfactory can take several doses before being seen by the physician. The oral dose is the same as the hypodermic dose or at least no larger, and the reaction is the same. Myer Solis-Cohen (Medical Record, September 20, 1913).

TYPHOID FEVER, GELATIN AND OLIVE OIL IN.

The use of gelatin in typhoid fever is almost imperative in view of the numerous indications for it which arise. Moderate quantities of it tend strongly to the prevention of intestinal hemorrhage. Furthermore, it possesses nutritive properties simulating those of the proteins, as well as serving to assist in overcoming the monotony of the diet. Therefore it aids in a measure in the prevention of the starvation to which the enteric patient is usually subjected. Pure gelatin is usually nearly colorless, odorless, and tasteless. The easily prepared gelatins on the market are often colored and flavored with injurious chemicals, *e.g.*, sulphuric acid, sodium benzoate, etc., and should be avoided. The gelatin used should be made from government

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inspected calves' feet treated with pure boiling water, and then delicately flavored with pure light wine or lemon.

Olive oil administered in doses of from 1 to 3 ounces, three times a day, is also a valuable adjuvant to the diet. In many cases the patients even show a gain in weight during convalescence over and above their weight before the onset of the disease. As a laxative, olive oil has no equal in typhoid fever. By its bland, soothing influence it permits the intestinal contents to escape without irritating the inflamed Peyer's patches and thus the tendency to intestinal hemorrhage is diminished. Kept clean and free from gas-forming elements, the intestine is practically never distended, and there need therefore be but little fear of perforation. A high rectal injection of lukewarm olive oil as occasion demands also gives very gratifying results. Israel Bram (New York Medical Journal, August 2, 1913).

TYPHOID FEVER, VACCINE TREATMENT OF.

The author reports 158 cases of typhoid treated by vaccines. These cases were in all stages of the disease,—incipient, moderately advanced, far advanced, in relapse, and moribund. There were 17 deaths, or a percentage mortality of 11. But if 8 of these cases, where but one dose of vaccine was given,—and that when the patients were moribund or *in extremis*,—are discarded, as well as one in which death occurred from pneumococcic meningitis after the typhoid had subsided, and the author's original case where, after a month of fever and with a hopeless prognosis, a single dose of vaccine was given, there was a total of 7 deaths in the remaining 148 cases, or a percentage mortality of 4.7. A parallel series of 100 cases not receiving vaccines showed 13 deaths.

The best results were obtained by preparing the vaccine from an old nonvirulent culture that has been subcultured for years in connection with the Widal tests. A new culture is made from this and incubated for twelve hours.

An early diagnosis of the disease is most important. This can often be first made by blood culture, days before the Widal reaction appears. The vaccines when properly used will do no harm in any stage of the disease or in a relapse. The earlier they are given, however, the greater may be the hopes of benefit therefrom. The more severe the case, the smaller should be the dose. Amounts as small as one or two million have seemed to transform some most critical cases into convalescents. The interval between doses is variable, averaging from two to four days. A dose or two administered after the temperature has reached normal will render relapses less frequent. W. H. Watters (Medical Record, September 20, 1913).

VERSION, A MEANS OF FACILITATING.

A method of effecting version by pressure on the thighs in transverse presentations is described by the author. A powerful influence on the transverse fetus can be exerted by having the woman assume a crouching position, with the body bent forward. Under these conditions pressure is caused in the precise directions necessary for an attempt at version by external manipulation. A. F. A. King (International Medical Congress, 1913; Presse médicale, September 13, 1913).

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Clinical Summary

Practical hints from articles and abstracts that have appeared in the Monthly Cyclopedia and Medical Bulletin during the current year.

Acne. TREATMENT. 1. Following lotion advised: Zinci sulphatis, potassæ sulphuratæ, sulphuris præcipitati, of each ʒj; aquæ, ʒiv; to be applied at night. 2. To keep open orifices of follicles, resorcinol in 10 to 15 per cent. paste, recommended. 3. If skin thick, sluggish and oily: Preliminary washing with tincture of green soap. 4. Warm water may be used after incising pustules, to favor bleeding, but for washing cold water is preferable. 5. X-rays of service (*a*) to increase local blood-supply and improve resistance; (*b*) to cause atrophy of sebaceous glands. 6. High-frequency current useful to reduce induration of nodular acne. 7. Massage or local manipulation, to facilitate drainage of ducts. 8. Dermal curet, when pustules cured and superficial epithelium somewhat macerated by resorcin. *Chipman.* Page 283

In acne indurata and pustulosa: Remove comedones and open pustules. Rub into skin at night one of the following pastes: (I) Sulphuris præcipitati, 3ij (8 Gm.); acidi salicylici, 3j (4 Gm.); petrolati, saponis viridis, ää ʒss (16 Gm.). (II) Betanaphtholis, resorcinolis, ää 3ij (8 Gm.); saponis viridis, petrolati, ää ʒss (16 Gm.); leave on one to three hours, according to irritation produced, then wipe off with oil, wash skin with water, and apply a bland ointment. Discontinue paste when skin begins to peel. *Hailperin.* 609

Actinomycosis. TREATMENT. X-ray treatment recommended in cases resisting customary iodide medication and recurring after operative intervention. *Levy.* 472

Adenitis, Tuberculous. TREATMENT. 1. Produce Bier hyperemia by applying elastic band about neck for a few hours before opening abscess. 2. Make very small straight incision into gland, evacuate contents with dull spoon, using no force, and, without washing or wiping out cavity, introduce a 2 to 4 per cent. solution of formaldehyde in glycerin, and seal incision. Primary healing results in 50 per cent. of cases; others are treated by further injections. 3. In cases of extensive involvement, prescribe enzymes of yeast internally. 4. In the few cases that do not respond satisfactorily, resort to radical operation. *Brown.* 303

Albuminuria. TREATMENT. Prophylactic doses of Roux's antidiphtheritic serum in 128 cases of scarlet fever found to lower greatly frequency of albuminuria in these cases. Anaphylactic effects extremely rare with this serum. In all cases of albuminuria originating from throat inflammation, as well as in albuminuria in general where other measures have proven ineffective, the serum should be given hypodermically in doses of 10 c.c. (2½ drams) every three or four days. *Galliot.* 36

Anal Fissure. TREATMENT. Conservative measures advocated in painful fissure. In examining for it have patient bear down, or blow in some orthoform. In treatment: 1. Apply thigenol on cotton on end of probe, which is then withdrawn, leaving cotton in position. 2. Patient to drink tumblerful of hot water an hour before breakfast, and another, either hot or cold, in evening. 3. To insure softness of motions: Tincture of cochineal and peppermint oil, of each, ♏x (0.6 c.c.); syrup of glycerin, ʒj (4 c.c.); soft paraffin, ʒj (31 Gm.). If this objectionable, add 20 grains (1.3 Gm.) of powdered cocoa, or 10 to 20 grains of powdered agar. Dose of the mixture, 1 teaspoonful four times daily. 4. Where constipation previously present: Some aperient, such as confection of senna, ʒss-j (2-4 c.c.), to be given in addition. 5. After bowels act: Patient to wash parts and apply some bland ointment, *e.g.*, one of eucalyptus. 6. Where violent sphincteric spasm and pain, dilate under gas, and, if sentinel pile present, remove with forceps. *Baldwin.* 109

Anemia. TREATMENT. Administration of olive oil and glycerin, equal parts, in gradually increasing doses two hours after each meal considered a valuable measure. *Bram.* 47

Appendicitis, Acute. TREATMENT. After operation in children: 1. Give warm saline solution by rectum, 8 to 10 ounces every two or four hours; administer slowly with catheter and funnel. 2. Feed with a decoction of crushed raisins, alternated with albumin water. 3. Open bowels as soon as possible. If no normal movement within twenty-four hours, give glycerin enema; use syrup of senna as routine aperient. *Stiven.* 37

Appendicitis, Chronic. DIAGNOSIS. In cases of chronic appendicitis with digestive symptoms, induction of referred pain or distress in the epigastrium, left hypochondrium, umbilical, left inguinal, or precordial region by a continuous firm pressure over the appendix (McBurney's point) is a valuable test in deciding when and when not to recommend operation. *Aaron.* 283

Ascertain lower, outer and inner borders of cecum, usually distended with gas, by percussion; estimate, from this, position of appendix, and find out whether there is tenderness at that point. Where mapping out cecum by percussion not possible, place

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thumb at junction of right edge of rectus muscle and umbilicospinal line and, with it pointing toward ensiform, sink it in about halfway to back of abdominal cavity; next swing it to right of patient at right angle to line of previous pressure, thus pinching appendix against unyielding structures and eliciting tenderness if it be diseased. If this test negative, repeat ½ inch lower and test again, until brim of pelvis almost reached. Control by pressure on left side. *Bassler.* Page 545

Arthritis, Chronic. TREATMENT. Certain joint cases, rebellious to all other treatment, can be arrested by proper diet combined with colonic lavage. Breakfast: Cereal, small amount; toast with butter; imitation cereal coffee. Between breakfast and lunch: Buttermilk, 2 glasses; water, 1 glass. Lunch: Clear soup (or lettuce or spinach); 1 roast potato; 2 slices toast; imitation coffee. Between lunch and dnner: Buttermilk, 1 glass; water, 1 glass. Dinner: Clear soup (or twice a week small amount roast chicken, or 1 egg); toast or lettuce; imitation coffee; apple sauce. Between dinner and bedtime: Buttermilk and water. Daily simple enema followed by high colonic lavage with about 1½ quarts normal saline solution, until washings return fairly clear. Adapt diet to individual caloric needs and with constant regard to weight. *Pemberton.* 45

Arthritis, Gonorrheal. TREATMENT. A. Acute. 1. Sodium salicylate, 1 to 4 drams (4 to 6 Gm.) or acetyl salicylic acid, 20 to 30 or 40 grains (1.3 to 2.6 Gm.), freely diluted, during febrile stage. 2. Where intolerable pain and insomnia or threatening rupture of synovial membrane or subluxation, puncture, repeated if necessary, and active counterirritation. 3. In suppurative and grave forms, arthrotomy, either simple or followed by iodine or zinc chloride. 4. Passive movements and massage, when acute symptoms subsided. Other available measures: 5. Antigonococcic vaccines. 6. Antimeningococcic serum. 7. Autoserotherapy. 8. X-rays or radium in obstinate cases. 9. Bier's hyperemia. 10. Hot-air treatment especially; air in hot-air-box at 175° to 210° F., for one-half to one hour at a time. B. Chronic. Additional special measures: 1. Disinfection of genitourinary tract. 2. Thyroid substance, 2-grain (0.12 Gm.) cachets one to three times daily. 3. Fibrolysin injections, 30 minims (2 c.c.) daily for a fortnight, where joint deformity present. *Dardel.* 236

Arthritis, Rheumatoid. TREATMENT. Atophan found most efficient drug in relieving pain in a case of rheumatoid arthritis. *Kahlo.* 350

Asthma, Bronchial. TREATMENT. 1. When patient first seen during an attack, give 10 grains (0.6 Gm.) of blue mass or an equivalent amount of calomel with soda, followed by salts next morning. 2. Morphine and atropine injection, only if patient suffering intensely. 3. Sodium iodate, gr. iv-v (0.25-0.3 Gm.) every four to six hours, in capsules, given with food (contraindicated in the tuberculous, especially if hemoptysis). 4. Repeat mercurial purge if attack not markedly better in twenty-four hours. 5. Diet. During attacks: Broths every two to four hours. In intervals between attacks: Enough plain, coarse food to satisfy hunger and no more. Soups, clear of fat; fresh fish; raw oysters or clams; tender and lean meats; all vegetables except onions, cabbage, cucumbers, corn on cob; potatoes, peas, and beans only sparingly; only well-baked or toasted bread; rice, cereals, and eggs in moderation; no raw fruits; pastry, sweets, and any articles found by experience to disagree to be avoided. Careful scrutiny of patient's selection of foods required. Heaviest meal to be taken at noon; light supper. *Oettinger.* 37

Theobromine sodium salicylate (diuretin) found to do good in many cases. Often it is sufficient to give 15 to 30 grains (1 to 2 Gm.) before time of expected paroxysm. The product can be taken for weeks without harm. *Meyer and Cahn.* 179

Inhalation of 1: 1000 epinephrin solution in a special very fine spray from small atomizer advised for arrest of a paroxysm by patient at any time. In established severe attacks, following combination recommended: Epinephrin solution, 9 c.c.; atropine sulphate, 0.01 Gm.; cocaine hydrochloride, 0.025 Gm.; distilled water, 1 c.c. *Staübli.* 284

Combined injections of 0.0008 Gm. (1/80 grain) of epinephrin and 0.04 Gm. (⅔ grain) of pituitary extract in 1 c.c. (16 minims) of water used with marked success in arresting paroxysms in 300 cases. More effectual than epinephrin alone. Second injection required in only 10 instances. *Weiss.* 296

Blepharitis. TREATMENT. Hydrogen peroxide solution recommended for removing the crusts. *Harry.* 612

Bronchopneumonia. TREATMENT. Creosote carbonate recommended for use in bronchopneumonia and obstinate chronic bronchitis in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first three years; in fifth and sixth years, 20 drops (2 Gm.). *Hunäns.* 162

Burns. TREATMENT. Where patient shocked and cannot stand anesthesia, use dressings of saturated picric acid solution for two days. Then clean up burns under chloroform general anesthesia with 70 per cent. alcohol, rubbing vigorously, and dress with same, on gauze, covered by dry gauze, cotton, and bandage. Dress daily in same way under anesthesia for eight days; then apply boroglyceride gauze dressings, when healing will rapidly follow. In burns involving whole skin, cut off sloughs with scalpel, without waiting for separation. To avoid excessive alcohol absorption, one may interpose boroglyceride gauze between burn and alcohol gauze. *Milligan.* 410

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Following modification of carron oil recommended for second-degree burns: Olei eucalypti, f℥iss (45 c.c.); olei olivæ, f℥xiv (420 c.c.); liquoris calcis, q. s. ad Oij (100 c.c.). Phenol, ¼ to ½ grain (0.015 to 0.03 Gm.), to be added to each ounce of this formula if burn very painful. Following ointment also gives good results: Ichthyolis, ℥j (30 Gm.); thymolis iodidi, ℥ss (2 Gm.); adipis lanæ hydrosi, petrolati, ää q. s. ad ℥ij (60 Gm.). In large third-degree burns one may apply a warm saturated sodium bicarbonate or aluminum acetate solution. For slowly granulating ulcerations, balsam of Peru, 1 dram (4 Gm.) to 1 ounce (30 Gm.) of a 5 to 10 per cent. scarlet-red ointment, applied very thinly at the margins, the surrounding healthy skin being protected with an ointment of boric acid or zinc oxide, is effectual. It is left on twenty-four to thirty-six hours only, and then a bland ointment applied to whole surface for two days, after which scarlet-red is again used. *Levinson.* Page 601

Carcinoma. TREATMENT. Silicic acid internally, ⅙ to ⅛ grain (0.01 to 0.02 Gm.) daily, advised to prevent recurrence after cancer operations. In cancer of digestive organs, however, not more than a few milligrams should be given daily. *Benedikt.* 242

Carcinoma, Esophageal. TREATMENT. Hydrogen dioxide, 1 dessertspoonful of 1 to 3 per cent. solution every hour, found to be valuable palliative measure where stenosis apparently complete. Within twenty-four hours stenosis is overcome, and later purées and even solid food can be swallowed. Subjective symptoms disappear and patients gain in weight. Measure of little use, however, in scirrhous form of cancer. *Fradiss.* 109

Cardiovascular Disease. TREATMENT. Ideal diet in presence of impaired circulation consists essentially of bread and butter, with some milk to supply fluid, and enough cheese to make up protein requirements; fruits and vegetables to be added in moderate amount. *Bishop.* 108

Reference made to cases with high blood-pressure, hypertrophied heart, without notable thickening of superficial arteries or renal changes of importance. Symptoms usually respiratory or gastric, occasionally vertigo, tinnitus, or peripheral numbness and tingling. Measures advised: 1. Rest, especially mental. 2. Reduction in quantity of food taken, especially of purin-containing articles; small evening meal. 3. Restriction of alcohol, and especially tobacco. 4. Bowels to be kept open with phenolphthalein and rhubarb, or compound licorice powder, and calomel or blue mass occasionally. 5. Nitrites, only to relieve symptoms; where nitroglycerin fails, sodium nitrite, ⅛ to 2 or 3 grains (0.007 to 0.2 Gm.), or erythrol tetranitrate, ½ grain (0.03 Gm.) useful. 6. Sodium iodide, two hours after meals, in water or milk. 7. Digitalis in small doses where dyspnea or even vertigo. 8. Venesection at times very useful and effective. *Riesman.* 288

Case of "bad heart attack," with rapid, irregular, feeble pulse, cyanosis, and dyspnea, but no edema, in a woman of 77, in which life was apparently saved, after failure of other remedies, by administration of cane-sugar in milk and syrup. Four ounces (120 Gm.) given during night, same amount in ensuing twelve hours, and smaller quantities for several weeks after. *Denyer.* 548

Cholelithiasis. TREATMENT. Radish juice, obtained by grinding up radishes and expressing through cloth, found effective in relieving and preventing recurrence of hepatic colic. Dose, ½ cupful a day, increased to 2 cupfuls, and after two or three weeks diminished gradually to ½ cupful 3 times weekly. Repeat "cure" several times yearly. *Gramme.* 602

Chorea. TREATMENT. Twenty-five cases, in children of 8 to 19 years, in which abnormal movements rapidly disappeared after 3 or 4 intravenous injections of 0.2 to 0.35 Gm. of salvarsan, given weekly. Recovery regularly after three or four weeks. General condition also always greatly ameliorated. *Marie and Chatelin.* 38

Conjunctivitis, Purulent. TREATMENT. In gonorrheal and membranous conjunctivitis, hydrogen peroxide gives good results. In former case it should be used as a warm douche (40° C. or 104° F.). Same remedy useful in corneal ulcerations. *Harry.* 612

Constipation. TREATMENT. Stubborn constipation in infants is relieved by giving 1 dram (4 c.c.) of olive oil once or twice daily. Constipation in neurasthenics is also benefited. *Bram.* 47

Cyanide Poisoning. TREATMENT. 1. Give 3 ounces (90 c.c.) of 1:10,000 epinephrin solution by mouth. 2. Give Martin's antidote, made by mixing 8¾ drams (33 c.c.) of 23 per cent. ferrous sulphate solution with 1 ounce (30 c.c.) of 5 per cent. potassium hydrate solution and ½ dram (2 Gm.) of magnesia. 3. Wash out stomach. 4. Give 1⅔ ounces (50 c.c.) of 1: 10,000 epinephrin solution. *Jona.* 553

Diabetes Mellitus. TREATMENT. For first two weeks restrict to careful antidiabetic diet, unless sugar in urine practically disappears in less time. Then cautiously increase carbohydrates, always warning patient of danger of overeating *permissible* articles. Should sugar persist, put to bed and restrict to 1 raw egg and 2 ounces of olive oil 3 or 4 times a day. Continue free use of a mildly alkaline drinking water. If any acidosis symptoms result, decrease amount of oil and give small quantities of carbohydrates. Proper mastication an important detail in treatment. For constipation, use: Olive oil, castor oil, glycerin, of each, 160 parts; gum arabic, 18; flavoring (oil of cassia or gaultheria), 0.5. Best dia-

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betic flour is: Unadulterated soy-bean flour, 350 parts; unground poppy seed, 30; eggs, 250; pure baking powder, 15; water, 340. *Hodgson.* Page 39

Cultures of lactic acid bacillus given to 13 cases in doses of 4 to 16 c.c. (1 to 4 drams) three times daily. Indican and sugar in urine both markedly reduced. Results probably due not only to removal of putrefaction, but also to partial inhibition of carbohydrate digestion by the bacilli, as indicated by experiments *in vitro*. *Horowitz.* 235

Necessity for individualization in prescription of diet emphasized. Low carbohydrate tolerance does not imply necessity of ingestion of an excess of meat. In all grave cases meats are dangerous. Vegetables are to be preferred, and those should be prescribed which, while containing a high percentage of carbohydrates, are well assimilated in the individual case. Large amounts of fats are often dangerous. *Graul.* 286

Iodine treatment considered indicated in diabetes in elderly persons. Sajodin, 3 tablets of 0.5 Gm. (7½ grains) each, given daily one after meals, found to cause marked reduction of previously obstinate glycosuria and general improvement in 3 cases aged, respectively, 66, 52 and 62 years. *Lorand.* 412

Diarrhea, Infantile. TREATMENT. 1. Where vomiting a prominent symptom: Iodine solution, consisting of 3 minims (0.2 c.c.) of the tincture in 1 ounce (30 c.c.) of water; one small teaspoonful to be given every two hours, before feedings. 2. Calomel, 1/6 grain (0.01 Gm.), with bismuth subcarbonate, 2½ grains (0.15 Gm.). 3. Some carminative mixture, with addition of rum if signs of collapse. 4. Where mucus and blood in stools: Sodium sulphate or phosphate, with a little opium tincture in bad cases. 5. Where persistent vomiting of food or medicine, falling temperature with aggravation of other signs, or exhaustion shown by sinking of eyes and loss of skin elasticity, hypodermoclysis of following solution to be practised: Sodium chloride, 0.9 per cent.; potassium chloride and calcium chloride, of each 0.02 per cent., and sodium bicarbonate, 0.01 per cent. Dose of solution, 25 to 150 c.c. (6 drams to 5 ounces), according to rapidity of absorption, average being 60 c.c. (2 ounces). Large doses to be given two or three times a day where signs of failing circulation. Injections contraindicated where very high fever. *Day.* 473

Tablets of pure culture of *B. lactis bulgaricus* used with unusually good results in 117 cases. Dose, 1 or 2 tablets every two or three hours; in severe cases, 2 or 3 tablets at same intervals before as well as after each feeding. Starvation treatment, even at first, condemned. *Clock.* 610

Diphtheria. TREATMENT. Intravenous administration of antitoxin advised in cases of malignant diphtheria; 5000 units thus given are equivalent to 20,000 subcutaneously. No bad results from intravenous use in nearly 200 cases. Serum to be warmed to blood heat before injecting. In little children one must cut down on the vein. Intramuscular injections are absorbed in one-half the time required by subcutaneous ones. *Park.* 413

Dupuytren's Contraction. TREATMENT. Thyroid substance continuously administered in doses of 0.1 Gm. (1½ grains) found markedly beneficial in 5 cases. *Gilbert.* 173

Eclampsia, Puerperal. TREATMENT. Report of 11 cases in which squeezing out of colostrum from breasts, thoroughly carried out, appeared usually beneficial. *Walcher.* 286

Following measures among those advised: (1) preliminary injection of ¼ grain (0.015 Gm.) of morphine; (2) colonic irrigations with 4 gallons of normal sugar solution at 115° F. (to be delayed, where marked edema, until after free sweating secured with hot pack); (3) for high-tension pulse, nitroglycerin, 1/50 grain (0.0012 Gm.) every twenty to thirty minutes till tension begins to lessen, then at longer intervals, to be preferred to veratrum viride. *Kosmak.* 604

Eczema. TREATMENT. Involved areas must be cleansed and kept aseptic. Apply 2 per cent. solution of aluminum subacetate and dust with starch powder. For vesicular eczema: Liniments with zinc carbonate or ichthyol. In recurrent cases paint with iodine tincture and cover with zinc oxide paste. Touch up rhagades with 3 to 5 per cent. silver nitrate solution. *Ravogli.* 547

Edema of Extremities. TREATMENT. Where edema of legs resisted all measures, especially where incision not permitted, good results obtained from local use of hypertonic saline solutions—25 to 50 Gm. (¾ to 1½ ounces) of sodium chloride to 1 liter (quart) of distilled water. Soak gauze compresses lightly in this, wrap around legs, and cover with thick layer of absorbent cotton, held in place by bandages. Leave dressing on overnight. Equally good results in edemas due to broken compensation, Bright's disease, etc. *Pathault.* 40

Endocarditis, Chronic. TREATMENT. Three cases stated to have been cured by injections of fibrolysin in conjunction with concussion of the seventh cervical spine to elicit the cardiac reflex of contraction. *Abrams.* 394

Epididymitis, Gonorrheal. TREATMENT. Epididymotomy performed in 16 consecutive cases, 1 bilateral. Result: Sudden and permanent relief from pain; defervesence in two days; rapid reduction in swelling; prompt healing; early convalescence without relapse. *Culler.* 348

Epilepsy. TREATMENT. Solution of 1 part of phosphorus in 10 parts of oil used in 9 cases of severe epilepsy, and generally

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caused pronounced reduction in frequency of attacks. Enterogenous autointoxication to be overcome before phosphorus begun. *Leubuscher.* Page 348

Epistaxis. TREATMENT. With patient sitting in chair, stand behind him, place index fingers of both hands beneath body of lower jaw on each side, with thumbs resting behind angles, and make gentle traction upward upon head, and simultaneously extend it backward as far as patient can comfortably bear. Sets up artificial anemia in nose and head in general, causing epistaxis to cease. Desist in one or two minutes, or consciousness may be partly or wholly lost. *Ritschl.* 165

Epithelioma. TREATMENT. Good results from spraying ulcer for two minutes with ethyl chloride, surrounding tissue being protected with cotton-wool. Repeat every other day, gradually prolonging spraying until tissues kept white and hard frozen for five to seven minutes. No bad effects. Involved area often heals, with almost invisible scar and no recurrence, and if treatment fails, disease will not have spread but usually been considerably reduced. *Seidelin.* 605

Erysipelas. TREATMENT. Local application of buttermilk on soft rags, latter to be kept constantly wet with it, gave uniformly favorable results. *Arnold.* 479

Eye Injuries. TREATMENT. Following formula used for disinfection of cornea, especially after extraction of foreign bodies: To 2¼ grains (0.15 Gm.) of stovaine, finely pulverized and dissolved in 5 drops of oil, add, after mixing, preferably on a water bath: Hydrated wool-fat, gr. lxxv (5 Gm.), and petrolatum, ʒiiss (10 Gm.). Then add gradually: Iodine, gr. ii¼ (0.15 Gm.); sodium iodide, gr. ivss (0.3 Gm.); water, ♏xxiv (1½ Gm.). *Dewaele.* 237

In simple abrasions of cornea: 1. Irrigate conjunctival sac thoroughly with normal saline or boric acid solution. 2. Drop argyrol in eye. 3. Fill conjunctival sac with a sterile medium consisting of petrolatum, ʒvj (180 Gm.); mercury bichloride, gr. j (0.06 Gm.), and sodium chloride, gr. v (0.3 Gm.). Where cornea already infected and ulcer present, sterilize area with phenol, removing excess with alcohol; or else, touch lightly with platinum probe at red heat. In wounds of cornea: 1. Cleanse eye thoroughly. 2. Cut off any projecting iris. 3. Drop in atropine and argyrol. 4. Fill with sterile petrolatum. In burns of eye: 1. Fill with sterile petrolatum. 2. Move eyeball and lids frequently to prevent adhesions. Where sclera wounded: Draw conjunctiva over wound and stitch together. *White.* 240

Scarlet red, 1 per cent. in petrolatum or petrolatum and lanolin, equal parts, found to promote rapid healing in corneal or conjunctival abrasions, wounds, or burns. A minute portion of the ointment is placed on conjunctival surface of everted lower lid and a pad and bandage applied, once daily or on alternate days. Atropine also to be used, if indicated. *Allan.* 359

Felon. TREATMENT. Incision (under nitrous oxide) before suppuration begins strongly advised. Make it parallel with and close to nail, in line of skin furrows, thus forming a flap of tip of finger. Insert rubber tissue or gauze with petrolatum in uppermost angle of wound and dress with normal salt solution, maintaining constant moisture. On third day packing comes away and no further packing is necessary, wound soon closing and finger resuming usual size and shape. *Dorrance.* 606

Fibroid Phthisis. TREATMENT. Where profuse expectoration of pus, creosote often best remedy. Dose, 3 to 5 drops (0.18 to 0.3 c.c.) three times daily, given over a long period. Creosote carbonate more easily tolerated; dose, 15 to 25 drops (0.9 to 1.5 c.c.) per day. *Fishberg.* 180

Filariasis. TREATMENT. Case of pronounced elephantiasis of lower extremities in which two intravenous injections of 0.6 Gm. of salvarsan caused disappearance of filariæ from blood and great reduction in size of limbs, weight falling from 400 to 244 lbs. *Barnes.* 1

Fistula, Rectal. TREATMENT. Injection of 1 per cent. aqueous formaldehyde solution recommended in all varieties of rectal fistula. Care to be taken that external opening of fistula allows free drainage for a few days. *Roehr.* 479

Fracture of Forearm. TREATMENT. To correct overriding of fragments, attach to hand, anteriorly and posteriorly, as separate straps, zinc oxide adhesive plasters 2½ inches in width, reading from above wrist to 6 inches beyond extended fingers, and fixed above wrist and about knuckles with encircling strips. Apply usual splint dressing and also a plaster-of-Paris encasing bandage, including hand and lower arm. When this firm, include beneath enveloped forearm, by more turns of plaster bandage, a light, flat wooden splint projecting 1 or 2 inches beyond extended fingers. To a cross-piece at end of this, projecting an inch, attach the double adhesive strap from hand with tacks, thus keeping bony fragments from overriding. *Miel.* 165

Fracture of Hip, Intracapsular. TREATMENT. Longitudinal traction alone often unsatisfactory in results. Longitudinal combined with lateral traction, however, or wide abduction in plaster of Paris, usually gives serviceable limb. Former far easier to apply and the more suitable the older the patient. Plaster-cast method requires much skill in application, and is better adapted to young patients. *Davis.* 41

Furuncle. TREATMENT. Following measures advised for early, hard boil on neck: (1) shave around boil with razor free from nicks; (2) bathe thoroughly with benzin

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followed by alcohol; (3) paint over strong iodine tincture or 3 per cent. alcoholic solution of picric acid; (4) scratch cap of vesicle off with point of knife; (5) effect gentle suction with Bier cup for three minutes, repeating this four hours later; (6) dress with gauze dipped in Wright's solution (sodium citrate, 1 per cent., and sodium chloride, 2 per cent.), covering with waxed paper, cotton compress and muslin bandage; (7) instruct patient to keep gauze wet with the Wright solution; (8) for an intolerably painful boil, infiltrate regional cutaneous nerves with novocaine; (9) incise only where infection has extended from original boil-focus; (10) to prevent recurrence, inject autogenous vaccine every four days, beginning with 100 million and doubling dose each time if reaction warrants it. Occasionally, injecting a very early boil with a few drops of pure phenol will abort it. *Skillern.* Page 607

Gangrene. TREATMENT. Alternate hot (95° F., gradually raised to 131° F.) and cold (room temperature) baths up to knee used with success in a case of sclerotic gangrene of leg. Pain relieved and normal color regained. Alternate immersions practised 30 to 50 times, morning and evening, for over a year. *Borchardt.* 348

Alternate lowering and raising of leg to horizontal position yields an effect similar to that of hot and cold baths in leg gangrene. *Moszkowicz and Frank.* 348

Gastric Pain. TREATMENT. Following combination recommended: Sodii bicarbonatis, gr. xij (0.75 Gm.); magnesii ponderosi, gr. iv (0.25 Gm.); pulveris belladonnæ foliorum, gr. ⅙ (0.01 Gm.). Where pain in association with gastric motor insufficiency, 2 of above powders should be taken an hour and a half-hour before, and again a half-hour and an hour after, each meal. Where delayed evacuation is due to pyloric spasm produced or kept up by hypersecretion, the powders should be taken during whole digestive process, beginning an hour after meals and continuing at intervals of an hour and a half until next meal. *Binet.* 480.

Gastric Ulcer. TREATMENT. Best preparation of bismuth to use is the subnitrate precipitated from a boiling-hot mixture. Cleanse stomach in morning with 150 c.c. (5 ounces) of Carlsbad or Vichy water, and three-quarter to one hour later give 10 to 20 Gm. (2½ to 5 drams) of bismuth subnitrate suspended in tumblerful of warm water. Administer daily, and increase or reduce dose, or discontinue, more or less rapidly, according to clinical course (Fleiner). Another method is to give same doses of bismuth finely suspended in oil, several times daily. Stepp recommends following bismuth suspension: Bismuthi subnitratis, gr. xlv (3 Gm.); chloroformi, ♏xv (1 c.c.); aquæ destillatæ, 5 fluidounces (150 c.c.); 1 to 2 tablespoonfuls to be taken hourly for several weeks. *Aaron.* 42

1. Absolute rest in bed. 2. No food for five to seven days. 3. Morphine hypodermically, until hemorrhage has ceased. 4. Ice-pack on abdomen, or hot applications in absense of hemorrhage. 5. Move bowels by enema, if necessary; where no hemorrhage, give citrate of magnesia or Carlsbad salts. 6. Bismuth subnitrate in 30-grain (2 Gm.) doses, with magnesium hydrogen dioxide (25 per cent.) in 7½-grain (0.5 Gm.) doses three times daily. Give boiled water if necessary to insure retention of these drugs. 7. Rectal alimentation, giving 500 c.c. (1 pint) of 10 per cent. dextrose solution at body temperature every six hours, by Murphy drop method. 8. Return to mouth feeding as soon as possible, according patient's condition, beginning with small doses of albumin water several times daily. *Gompertz.* 139

Injections of atropine recommended to quiet pain and diminish pyloric spasm; especially of service in acute cases. Injection of ¼ mgm. (1/256 grain) to be given three times the first day, then 1 mgm. (1/64 grain) given in 2 doses the second day, then 1½ mgm. (1/42 grain) divided in 3 doses daily for ten to twelve days. *Mathieu and Giraud.* 414

Gastrointestinal Disturbance, Infantile. TREATMENT. Where constipation present, with retention of toxic food derivatives and symptoms such as high fever, tympanites, stupor, etc., give a 2-grain (0.12 Gm.) dose of calomel in candy form, followed in an hour or two by large dose of castor oil with ¼ its volume of equal parts of aromatic syrup of rhubarb and port wine. Keep child quiet on back. If doubt whether cathartic can work in time, give hot colon flushes to start intestinal action, or in obstinate cases, following enema: Epsom salt, glycerin, of each, 8 ounces; turpentine, 1 dram, and water, to 2 quarts, given at 110° F.

Subsequent treatment: Diet of toast water or good beef broth alone until temperature nearly normal. Calomel, 1 grain divided, followed by the castor-oil compound, every day and later on alternate days till stools normal. After this, equal parts of aromatic fluidextract of cascara sagrada and glycerin. *Freeburg.* 292

Goiter. TREATMENT. Iodine may have favorable effect in young patients, but not so often after 30. Thymol, phenyl salicylate and iodine apparently indicated as intestinal antiseptics. *Mayo.* 607

Gout. TREATMENT. Atophan used in 48 cases — acute, neuritic, and chronic — with greater relief than had been obtained from other remedies, except in the chronic cases, in which effects were slight. Gouty sore throat and coryza also generally benefited. Dose, 30 to 60 grains (2 to 4 Gm.) a day, in 7½-grain (0.5 Gm.) tablets, 1 or, in severe cases, 2 after each meal and at bedtime, or every two or three hours. *Kahlo.* 350

Headache. TREATMENT. Migraine and other forms of severe headache relieved by

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causing copious flow of nasal secretions, thus removing congestion of dura and pia. Formulæ used: I. Mentholis, gr. viiss (0.5 Gm.); acidi borici, gr. xv (1 Gm.); iridis florentinæ, saccari lactis, of each, 3ss (2 Gm.). II. Pulveris mayoranæ, iridis florentinæ, of each, gr. xv (1 Gm.); sacchari lactis, 3ss (2 Gm.); veratri (albi), gr. ii¼ (0.14 Gm.). *Lorand.* Page 237

Treatment of "indurative" variety considered. 1. Saline purge. 2. Rest in bed. 3. Affected muscles to be kept at rest. 4. Free diaphoresis at outset of attack. 5. Hot fomentations or bags *loco dolenti* for several hours. 6. Salicylates in full doses often effective in acute cases. 7. Colchicum and alkalies, if patient gouty. 8. Applications of chloral, menthol, and camphor rubbed together, locally. 9. Massage. 10. Vibration, except where arteriosclerosis. 11. Rhythmically reversed electric current. 12. In chronic cases with marked fibrosis: Potassium iodide and general tonics, or ionization with 2 per cent. sodium salicylate or lithium iodide solution. *Beling.* 291

Hemoptysis. TREATMENT. Subcutaneous injection of 40 c.c. of sterile gelatin solution recommended. Causes in twenty-four hours rise in viscosity of blood by 1.4 of original value. *Cmunt.* 110

To prevent onset of hemoptysis where sense of tightness in chest or sputum blood-streaked: 1. Absolute rest. 2. Nitroglycerin solution, ♏xv (1 c.c.), or sodium nitrite, gr. xv (1 Gm.), in ℥ij (60 c.c.) of water; ℥j (4 c.c.) every four hours for two or three days.—Where actual hemorrhage: 1. Put to bed in comfortable position. 2. Reassure patient. 3. Amyl nitrite inhalation. 4. Atropine, gr. 1/50 (0.0012 Gm.) hypodermically, to be repeated 2 or 3 times in next twenty-four hours. 5. Or, nitroglycerin, gr. 1/100 (0.0006 Gm.) hypodermically, at first every half-hour for 3 or 4 doses, later less often; followed by sodium nitrite, gr. j (0.06 Gm.) every three or four hours. 6. Where excessive nervous irritability, or cough troublesome: Morphine. 7. In abundant hemorrhages: Apply bandages to middle of arms and thighs. 8. Epinephrin hydrochloride, 5 drops of 1: 1000 solution, or suprarenal substance, 3 grains (0.18 Gm.), every three or four hours; or pituitary extract, injected subcutaneously. *Frazer.* 111

Hemorrhage. TREATMENT. In operations where bleeding from bone troublesome, cut a fragment of muscle from any convenient place in operative field and apply to bleeding bony surface or edge. Rub in if it will not adhere at first. Always efficient in arresting the bleeding. *Vaughan.* 290

Thermocautery employed with success in 2 cases of hemophilia to arrest hemorrhage that had proven rebellious to pressure, epinephrin, gelatin, etc. *Hahn.* 416

Hemorrhage, Gastrointestinal. TREATMENT. Where only occult blood: Rest in bed, on diet of 3 or 4 liters (quarts) of milk, with Carlsbad water, until no blood detected for three or four days. Where liver or spleen enlarged and Wassermann positive: Specific treatment. For severe hemorrhage from any cause: (1) Diet limited to cold tea, ice-cold milk or egg-white jelly, taken regularly in very small amounts. (2) Saline enteroclysis by drop method, 1 liter each day, with 15 drops of 1: 1000 epinephrin solution added. (3) Ice-bag. (4) Gelatin in severe cases. (5) Rectal injections of calcium chloride. (6) Gastric lavage with ice-water, where clots palpable in stomach. *Boas.* 351

Hemorrhoids. TREATMENT. Olive oil a good demulcent laxative in hemorrhoids and anal fissure. *Bram.* 47

Where not much inflammation or hemorrhage, following ointment advisable: Cerati, olei amygdalæ expressi, zinci oxidi, of each ℥iiss (10 Gm.); balsami Peruviani, gtt. iij. Piece of this of size of hazelnut to be introduced high up through anus morning and evening, and especially before stool. Where much hemorrhage, following may be used: Chrysarobini, gr. xij (0.8 Gm.); iodoformi, gr. v (0.3 Gm.); extracti belladonnæ fol., gr. x (0.6 Gm.); petrolati, ℥j (30 Gm.). Hot water or antipyrin in powder or 2 per cent. solution equally effective and less irritating. Where intense itching: Aluminis, gr. xv (1 Gm.); camphoræ, gr. xij (0.75 Gm.); adipis benzoinati, ℥j (30 Gm.). Where much moisture and also itching, 10 per cent. bismuth subsalicylate powder useful. If much congestion, use: Bismuthi subsalicylatis, zinci oxidi, of each gr. lxxv (5 Gm.); talci, ℥iij (90 Gm.). In voluminous, readily prolapsing or bleeding hemorrhoids, an injection of olive oil should be taken every evening before retiring. *Plicque.* 166

Rectal injections of pure crystallized calcium chloride strongly recommended for hemorrhage due to hemorrhoids. *Boas.* 351

Injection method used in about 450 cases with good results. Solution employed: Phenolis, 3j (4 Gm.); glycerini, q.s.; aquæ, q.s. ad 3x (40 c.c.). Phenol and water to be first mixed, then glycerin added drop by drop, stirring. About 50 per cent. of all cases could be safely treated and cured by injections. Clamp and cautery to be preferred, however, where patient not opposed to operation and there is no contraindication. Cases especially suited for injection method: (1) the markedly anemic; (2) tuberculous subjects; (3) where organic disease contraindicates anesthesia, particularly if subjects highly nervous; (4) bleeders. Not over 10 minims of the 10 per cent. phenol solution to be used at one sitting. No superficial necrosis, abscesses or thrombosis in author's cases. *Humphreys.* 351

Hepatic Cirrhosis. TREATMENT. Four cases improved or apparently cured by limited milk diet (6 glasses), medical treatment, including administration of hexamethylenamine, and insurance of regular bowel movements.

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Alcohol to be forbidden. After improvement, milk to be increased to 8 glassfuls, and later fruit allowed. Milk or almost exclusive milk diet to be continued for at least two months, and followed by light diet of simple foods. *N. S. Davis, Jr.* Page 548

Hyperchlorhydria. TREATMENT. Where patient constipated at beginning of treatment, give suspension of magnesia and bismuth just after and again one and a half hours after meals; each dose to represent 6 grains (0.4 Gm.) of magnesium hydroxide and 22 grains (1.5 Gm.) of bismuth subnitrate. Continue for three to five days, and, if evacuations still too frequent, use instead a powder containing equal *volumes* of magnesium oxide and magnesium carbonate, with a little powdered charcoal and sometimes bismuth. Less magnesium oxide should always be prescribed than is capable of neutralizing completely all the acid present. *Tupper.* 167

On a diet as nearly salt-free as possible without special preparation of foods before they reach the cook, hyperchlorhydria almost invariably abates. *Benedict.* 354

Ileocolitis, Infantile. TREATMENT. In "putrefactive diarrhea" of infants, all irritating food should be avoided as, by causing increased mucous flow, it favors bacterial pullulation. Use of proteid of cows' milk, obtained by removing whey from skimmed milk with chymogen or pepsin, advisable. Break up curd into fine particles and suspend in 5 per cent. gelatin water, to be heated before administration. After four or five days to a week replace gelatin water partly by buttermilk, and skimmed-milk curds by whole-milk curds, gradually getting child on albumin-milk and finally on whole-milk mixture. *Grulee.* 168

Impetigo Contagiosa. TREATMENT. Remove all crusts, wash raw surfaces with bichloride solution, make a fresh paste by adding a few drops of mercury bichloride and ammonium chloride solution (1: 2000) to small quantity of zinc oxide, and apply to irritated places twice daily. *Hiden.* 182

Infections, Pyogenic. TREATMENT. Dilute sulphuric acid in 20- or 30- minim (1.25-2.0 c.c.) doses, diluted with 2 oz. (60 c.c.) of water, every four hours, found very useful in treatment of carbuncles, boils, and other local pyogenic infections. Rapid circumscription and granulation of affected area follows. Dressing of 1: 20 carbolized petrolatum used externally. Same measure found useful in early sepsis, inflamed lymphatics, blind boils, recurrent pimples and acne. In bronchiectasis and phthisis sputum becomes less purulent and less in amount. *Reynolds and Reynolds.* 284

Influenza. TREATMENT. Care to secure proper ventilation, alimentation, and elimination necessary. Local treatment of air passages important, to destroy causative bacillus. In the morning: 1. Cleanse nose and throat with spray of Dobell's solution or 1: 400 phenol solution at 85° to 90° F. 2. Swab with: Balsam of Peru, gr. x (0.6 Gm.); ichthyol, gr. v (0.3 Gm.); glycerin, q. s. ad f℥ij (60 c.c.). In the evening: 1. Repeat spray. 2. Have patient inhale for one-half hour creosote, 8 c.c. to quart of water. 3. Swab nose and throat with epinephrin solution. 4. Fifteen minutes later swab with argyrol, 10 per cent. Hydrotherapy of value in chronic cases. In severe chronic cases, sojourn in an even and sunshiny, but not tropical or subtropical, climate desirable. *Jones.* 111

Inversion of Uterus. TREATMENT. To arrest hemorrhage, place elastic band around base of uterus in vagina just tightly enough to check flow of blood, but no more; take off band when bleeding stopped. Where inversion incomplete, tampon vagina, and perhaps also suture vulva together. Reduction of uterus not to be attempted until shock recovered from; otherwise, mortality considerable and reduction frequently fails. Reduction to be done under general anesthesia, with pelvis elevated. Operator to exert pressure near orifice of one tube with tips of fingers, using rest of hand for counter-pressure. *Zangemeister.* 354

Iritis. TREATMENT. Sinus infection considered responsible for many cases of intraocular inflammation. Following treatment used with good results in 26 cases of iritis and 5 of idiopathic retinochoroiditis: Saturate tampon, of such size as to fit snugly between middle turbinate and septum and extend from exterior portion of nose to sinus posteriorly, with aqueous argyrol solution (gr. xl-℥j) and introduce. This will drain ethmoid and other sinuses. To drain antrum, place tampons under scroll of middle turbinate and above upper part of inferior turbinate. Allow to remain twenty minutes to one hour. *Manning.* 112

Lead Poisoning. TREATMENT. Obstinate lead colic relieved and constipation overcome by giving a tumblerful of olive oil once daily. *Bram.* 47

Leukemia. TREATMENT. Benzol (benzene) used in 6 cases of myeloid leukemia and 1 of Hodgkin's disease with good results. Given in capsules each containing 0.5 Gm. (8 minims), with same amount of olive oil; at first, 4 capsules daily, after meals, then 2 capsules 3 times daily, later 4 times, and finally 5 times. Leucocyte count gradually lowered to normal, fever disappears, and general condition improved. Effectual where other measures, including X-rays, have failed. *Kiralyfi.* 114

Benzol in doses of 7 minims (0.5 c.c.), increased to 15 minims (1 c.c.), in capsules, after meals and at bedtime, given in 5 cases—4 myelogenous and 1 lymphoid. Results: Rapid fall in leucocytes, resulting in leucopenia in 3 cases; diminution in size of spleen; improved red cell count and hemoglobin; disappearance of lymph-nodes in lymphoid

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case; improved general condition. Use of drug should be controlled by frequent blood examinations. *Billings.* Page 293

Malaria. TREATMENT. (1) Calomel, 3 to 5 grains (0.2 to 0.3 Gm.), followed in twelve hours by 2 ounces (60 c.c.) of 50 per cent. magnesium sulphate solution. (2) Quinine sulphate, 20 grains (1.25 Gm.) in 4 drams (16 c.c.) of distilled water with 4 drops of concentrated hydrochloric acid. (3) Quinine sulphate, 15 grains (1 Gm.), prepared as before, three times daily for a week, after which dose reduced to 30 grains (2 Gm.) daily for ten days. (4) When vomiting present, quinine bihydrochloride, 22½ grains (1.5 Gm.), given in 5 drams (20 c.c.) of normal salt solution as deep subcutaneous injection. (5) In obstinate relapsing cases, quinine injections of 15 to 30 grains (1 to 2 Gm.) in 300 to 500 c.c. (10 to 16 ounces) of normal saline, given intravenously on two succeeding days, then 45 grains (3 Gm.) a day by mouth. (6) Arsenic, iron and strychnine as tonics. *James.* 610

Marasmus. TREATMENT. Large series of infants with marasmus, congenital or acquired, and premature infants, treated with marked success by external application of codliver oil. Wrap child in oil-soaked flannel from armpits to iliac crests, and cover with oiled silk. Remove flannel, wash skin with soap and water, and reapply flannel, at twelve-hour intervals. Give only water by mouth, in ample quantity. Treatment causes rise in temperature, loss of dryness and wrinkles of skin, and an increase in weight, often considerable. Feed by mouth only when temperature has been normal for a number of days and skin shows increase in fat and water content. *Gray.* 114

Measles. TREATMENT. Following measures employed in 160 cases: (1) hot bath, followed by (2) application of eucalyptus oil to whole body except hands and part of face about mouth, nose, and eyes; (3) mouth irrigated twice daily with weak alum lotion, and glycerin and borax applied to interior of mouth and gums; (4) tonsils and fauces treated with 1:10 phenol morning and evening, using firm cotton mop on end of forceps; (5) blanket-bath given morning and evening for four successive days, followed by general oil rubbing. Treatment reduced mortality and had favorable influence on course of disease. Careful nursing and maintenance of an even air temperature of 65° F. important accessory measures. *Connolly.* 239

Nephritis, Acute. TREATMENT. Saline proctoclysis advised in acute nephritis in children. Tends to relieve edema and subjective symptoms and improve condition of urine. Normal salt solution, kept at about 110° F. by hot-water bottles surrounding graduated container, passed into rectum through soft-rubber catheter, which is inserted about 6 to 8 inches after a cleansing enema. Procedure also useful in acute infectious diseases and toxemic diseases, as well as before and after ether anesthesia. *Lowenburg.* 171

Renal decapsulation practised after appearance of anuria in 2 cases of nephritis due to acute mercurial intoxication. Both cases ultimately died, but not from anuria, urinary function having been resumed. *Tisscrand.* 295

Nephritis, Chronic. TREATMENT. Following treatment advised: (1) Exercise to be allowed unless hematuria occurs,—avoiding overexertion. (2) Frequent long vacations. (3) Diet: Limit proteids to amount that will maintain bodily strength (80 to 100 Gm., a third at most in the form of meat, *i.e.*, 130 to 160 Gm. of meat weighed raw); preserved meats, except mild ham, to be forbidden; rest of proteids to consist of milk, eggs and vegetable albumins; amount of fat and carbohydrates to depend upon general nutrition, and should cause neither undue gain nor loss of weight. (4) Salt intake to be restricted in so far as it does not interfere with palatability of food; to be prohibited only where edema. (5) Restriction of fluid to 1¼ to 1½ liters a day, except one day weekly, on which amount is raised to 2½ liters. In "secondarily contracted kidney" about 2 liters should be allowed daily. (6) Carefully prescribed gymnastics for the heart. (7) Baths and massage; especially, lukewarm baths followed by cold douches and vigorous rubbing, in alternation with electric or carbon dioxide baths. (8) Diuretin, 7½ grains (0.5 Gm.) three times a day for a month, every third or fourth month. (9) Warm, dry climate, with avoidance of considerable altitudes. *Von Noorden.* 357

Neuralgia. TREATMENT. Application of X-rays to corresponding nerve-roots give good results in sciatica as well as brachial or trigeminal neuralgia or neuritis, provided the condition be due to a true radiculitis or a lesion compressing the nerve-roots, and not to peripheral involvement. *Zimmern, Cottenot, and Dariaux.* 612

Neuritis. TREATMENT. Place long electrodes consisting of absorbent cotton wrapped in gauze, parallel in pairs along limbs or spinal column. Current to be transmitted through metallic bands of suitable length. Intensity of current 60 to 80 milliampères for an arm and 100 to 125 for a lower limb. Sitting to last three-quarters to one hour, and be frequently repeated. Method used in nearly 600 cases, with excellent results. Traumatic myelitis benefited. *Hirtz.* 420

Ophthalmia, Gonorrheal. TREATMENT. Stock gonococcic vaccines used in 9 cases, causing prompt reduction of swelling and protecting deeper corneal and conjunctival tissues from invasion. Initial dose for babies, 50 millions; subsequently 100 millions. For adults, double these doses. Local cleanliness and antisepsis to be simultaneously maintained. *Mittendorf.* 349

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Otitis Media. TREATMENT. Where discharge copious, syringe ear gently but thoroughly 2 or 3 times daily with saturated boric acid solution, or, better, mercury bichloride solution, 1: 8000, sometimes later 1: 4000. Where discharge scanty, first cleanse ear with cotton mop, or if acute stage of attack passed drive out discharge by Valsalva method or Politzer bag and wipe out again. Then have patient incline head and pour in bichloride solution, allow to remain ten minutes, dry ear, not very thoroughly, and plug meatus with absorbent cotton. Do this not oftener than once daily. Exceptionally, especially where there is extensive destruction of drumhead, insufflation of boric acid, or of boric acid and aristol or zinc oxide, equal parts, proves more efficacious than the mercury solution. *Thcobald.* Page 116

In long-standing cases of chronic catarrhal otitis media that have resisted usual measures, cocainize parts, insert fine catheter into middle ear, and with syringe inject through it 5 to 10 minims of 10 per cent. argyrol solution. Causes inflammatory reaction and pain for forty-eight hours, but hearing is markedly improved. *Hays.* 296

Following measures advised in chronic otitis media: 1. Restricted diet, mainly of vegetables, fruit and buttermilk; prohibition of red meats and pastries. 2. Calomel, 5 or 10 grains, followed in six or eight hours by 1 ounce of castor oil, and this, in three or four hours, by ½ oz. of magnesium sulphate and 1 dram of sodium bicarbonate in 6 ozs. of carbonated water. Magnesium sulphate, 1 dram, daily before breakfast for from two to four weeks. 3. Sodium or strontium iodide, 1 to 5 grains; sodium or strontium salicylate, 5 to 10 grains, and tincture of nux vomica, well diluted, 3 times daily after meals. 4. Removal of nasopharyngeal and faucial abnormalities. 5. Alkaline wash used with nasal cup two or three times daily to keep nasopharynx clean. 6. Vibratory massage over subglenoid fossa, with gentle inflation of middle ear with vapor of chloroform, iodine or menthol, two or three times a week. 7. Where membrane relaxed and flabby: Paint posterior inferior quadrant with tincture of iodine (25 per cent.) once or twice a week, or with flexible collodion. 8. Small doses of thyroid extract. 9. Thiosinamine in cases with well-defined adhesions. *Stucky.* 297

In acute otitis media, otitis externa, myringitis, and furuncle of auditory canal, mixture containing 5 per cent. each of phenol and ichthyol in glycerin found very efficacious. *Nelson.* 488

Pancreatitis, Subacute. TREATMENT. 1. Rest. 2. Limitation of diet. 3. After acute attack of pain has passed off, cholecystostomy. *Archibald and Mullally.* 360

Paralysis, General. TREATMENT. Hexamethylenamine, gr. x (0.6 Gm.) thrice daily, found effectual in preventing retention of urine and avoiding necessity for catheterization. *Baird.* 242

Pediculosis Capitis. TREATMENT. Lay patient on back on bed with head over edge, hair lying in a basin beneath head on a chair. Pour 1: 40 phenol solution over hair into basin and sluice backward and forward until hair thoroughly soaked, especially over ears and at nape of neck. Continue sluicing ten minutes, then lift hair from basin and allow to drain, without drying it. Then swathe head with thick towel or large piece of flannel and allow to remain for an hour. Finally wash hair or simply allow to dry. Method entirely safe with children of 5 years and over. Hair not damaged. *Whitfield.* 173

Pellagra. TREATMENT. Gelsemium followed by much improvement in 5 cases. Fluidextract, 3 or 4 drops every four hours, given. Discontinue drug if ptosis or diplopia occurs. *Blosser.* 174

For diarrhea in pellagra: (1) Administer hot colon irrigations, followed by five- to ten-minute cold sitz baths, two to four times daily; (2) encircling abdomen with thick towel saturated with cold water; (3) copious water drinking. For itching of skin: Cool or cold saline bath made by addition of sodium chloride, 7 pounds; magnesium chloride, 1 pound, and magnesium sulphate, ½ pound, to 30 gallons of water. For burning hands and feet: (1) ice-cold compresses applied at frequent intervals; (2) baths in hot mustard water; (3) hot leg and arm packs; (4) revulsive compresses to spine, applied three to five minutes when hot and thirty seconds when cold; give 3 such treatments daily, each lasting thirty minutes. *Niles.* 613

Pelvic Inflammation, Chronic. TREATMENT. Following procedure of massage used with good results in chronic perimetritis with adhesions, chronic parametritis, shortening of uterosacral ligaments with uterine retrodisplacement, and old pelvic exudates: steady and slightly lift up cervix with index and middle fingers of left hand, and with right hand, by rotary movements, massage uterus through abdominal wall, slowly, and only 10 to 15 times at the first treatment. If no unusual pain or soreness follows, repeat three times weekly until symptoms relieved. Where uterus retroverted, place inside fingers against anterior portion of cervix and push posteriorly, at same time bringing uterus forward with outside hand. *McMorrow.* 421

Pemphigus. TREATMENT. Case of refractory pemphigus in which intravenous injection of blood from patient's husband, without previous defibrination, was followed by complete recovery. *Practorius.* 422

Placenta Prævia. TREATMENT. Pituitrin used with good results in 16 cases. If only a small portion of placenta presents, and especially if vertex presents and cervix is sufficiently dilated, membranes should be ruptured and pituitrin given. In other cases

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employ combined version with pituitrin, and await spontaneous delivery, merely extracting arms and head. Where dilatation insufficient for combined version, insert small dilating bag or vaginal tampon, and later do version and give pituitrin. *Trapl.* Page 423

Pleurisy. TREATMENT. Autoserotherapy advised in all cases of pleural effusion where fluid not purulent. Upon exploratory puncture, do not withdraw needle entirely, but inject 2 to 5 c.c. of the fluid when its point is in subcutaneous tissue. In favorable cases, general amelioration in two or three days; in about 80 per cent. of cases fluid will disappear in a week or ten days. In some patients treatment may have to be repeated several times every two or three days before benefit appears. *Fishberg.* 425

Pneumonia, Lobar. TREATMENT. Sodium citrate internally found in most cases, especially in children, to cause fall in temperature, pulse, and respiration to normal within twenty-four hours; process in lung clears up soon after, third stage being apparently escaped. Administered in doses of 30 to 40 grains (2 to 2.6 Gm.) in adults every two hours, with a little citric acid or in lemonade. Dose for children to be calculated from 40-grain dose in adults. Drug to be continued till clearing up of process in lung complete. Active catharsis to be established at beginning of treatment. Sodium chloride should be supplied to system in about the normal daily amount (240 grains, or 16 Gm.), with the diet or otherwise. *Weaver.* 116

Administration of calcium chloride in 10-grain (0.6 Gm.) doses every four hours advised, from outset until three days after defervescence. Patients given it seem to do better than others. *Cornwall.* 175

Creosote carbonate observed to lower temperature considerably and diminish somnolence or delirium in pneumonic processes in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first 3 years; in fifth and sixth years, 20 drops (2 Gm.) and in seventh to tenth years, 25 to 30 drops (2.5 to 3 Gm.). Administered readily in a spoonful of warm milk. To be continued in ½ doses for a week after auscultatory signs have disappeared. *Hunäns.* 162

Use of a 20 per cent. solution of camphor in olive oil previously washed with alcohol recommended in both lobar and bronchopneumonia. Mortality seemed lowered by post-trochanteric injections of this. Dose in cases of intermediate severity, 10 c.c. (2½ drams); in grave forms 15 and even 20 c.c. (3¾ and 5 drams), ½ the amount being injected morning and evening. In children 1 c.c. (16 minims) for each year of age is given. *Certain.* 209

Following mercury and sulphur combination advised in both lobar and lobular pneumonia: Hydrargyri chloridi corrosivi, gr. ss (0.03 Gm.); sulphuris præcipitati, ʒij (8 Gm.); aquæ destillatæ bullientis, fʒiv (120 Gm.). This is to be shaken and then quickly given in the dose of 1 teaspoonful every two or three hours for two or three days. If, when the thirty-second dose is reached, catharsis has not occurred, ½ ounce (15 c.c.) of castor oil is given. Cessation of fever and loosening of cough promptly follow these measures; lung infection is apparently cut short. After evening temperature is normal, the mercury-sulphur mixture is continued for several days longer at four- to six- hour intervals. *Kolipinski.* 402

Vaccine treatment recommended. Stock vaccine sufficient, and should be begun as soon as diagnosis made. Inject 50 million bacteria as first dose, then increase rapidly, giving 100 million on second day, 200 million on third, etc., provided temperature has not abated after first injection; if it has, no further injection necessary. Marked relief from pain and dyspnea procured. *Bispham.* 552

Poisoning by Illuminating Gas. TREATMENT. I. First stage, preceding loss of consciousness: 1. Fresh air. 2. Aromatic spirit of ammonia. 3. Effervescent sodium phosphate, to produce eructations and relieve nausea. 4. Oxygen inhalation. 5. Analgesics for headache. 6. Avoidance of violent exertion.—II. Second stage, patient unconscious, but breathing: 1. Howard artificial respiration, rhythmic compression of lower thorax, to assist breathing. 2. Oxygen, preferably under pressure. 3. Camphor, caffeine, digitalis, and strychnine hypodermically. 4. External heat, if indicated. 5. Massage of muscles after aërating lungs. 6. Treatment to be conducted in warm room. 7. If not prompt recovery, venesection and normal saline infusion, or use of "pulmotor."—III. Third stage, patient unconscious and not breathing: 1. Same measures as in preceding stage. 2. Blood transfusion. 3. Artificial respiration by Schäfer method, patient prone. *McCombs.* 44

Psoriasis. TREATMENT. Potassium permanganate, 2 tablespoonfuls of a saturated solution added to a warm bath, recommended for acute universal psoriasis. After soaking in this for ten or fifteen minutes, patient to dry himself thoroughly and apply following lotion: Amyli, talci, of each, 40 parts; glycerini, 20 parts; acaciæ, 1 part; liq. plumbi subacetatis, 4 parts; liq. picis carbonis, 26.5 parts; aquæ, 200 parts. Tar baths, preparing by adding 1 or 2 glasses (ʒviij or xvj) of an emulsion of coaltar, also excellent, though a tar salve, rubbed in after a bath, is often better. Following paste found efficient in some obstinate old patches: Acidi salicylici, 10 parts; chrysarobini, olei rusci, of each, 20 parts; saponis viridis, adipis lanæ hydrosi, of each, 25 parts. Cover with oiled silk. A lotion of 1 part of lead subacetate solution to 5 of liquor picis carbonis, diluted 3j-Oj, may be used to envelop the part, covered with oil-silk, and allowed to remain all night. *Montgomery.* 175

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Puerperal Sepsis. TREATMENT. 1. Complete physical and mental rest. 2. Well-ventilated room with sunshine. 3. Fowler position. 4. Cold sponging and ice-bag to head for hyperpyrexia. 5. Ice-bag locally in case of localized pelvic inflammation. 6. Saline enteroclysis by drop method. 7. Serum or antitoxin, to be followed by reliable stock vaccine if blood count favorable and patient lacks sufficient reaction to combat infection. 8. Whisky, quinine, etc., to be avoided. 9. Careful feeding at regular intervals. 10. Breast nursing to be stopped unless mental effect too depressing. 11. Curettage only for hemorrhage indicating foreign body in uterus. 12. Vaginal drainage under gas or scopolamine-morphine anesthesia if pelvic abscess develops. 13. No vaginal and uterine douches. *Gillmore.* Page 554

Pyelonephritis in Pregnancy. TREATMENT. 1. Rest in bed. 2. Elevation of affected kidney. 3. Morphine or codeine for pain. 4. Early catharsis by calomel and salines. 5. Ice-cap to loin. 6. Cream of tartar water internally. 7. Diet: Milk, skimmed if much digestive disturbance, or lactone buttermilk. 8. Hexamethylenamine, gr. v-x (0.3-0.6 Gm.) with lithium or potassium citrate, gr. x, at three- or four- hour intervals. 9. Replace last after forty-eight hours by sodium benzoate, gr. x every two hours, until patient complains of burning in kidney region, when first combination should be resumed. 10. Potassium iodide or phenyl salicylate might also be used. 11. Argyrol (25 per cent.), 3j (4 c.c.), instilled into pelvis in cases persisting more than ten days. 12. In colon bacillus infections, autogenous vaccines, 30 to 50 million once a week, have been successful. 13. Induction of labor, in persistent cases late in pregnancy. 14. Nephrotomy and drainage where definite signs of surgical kidney present. *O'Connor.* 240

Quinsy. TREATMENT. To relieve dysphagia, place on tongue 0.3 to 0.4 Gm. (5 to 6½ grains) of dry orthoform or anesthesin powder. A few movements of deglutition, without previous admixture of saliva with the powder, will bring it in contact with affected parts. Measure also useful after operation on tonsils. *Hinsberg.* 418

Rectal Feeding. Best nutrient enema consists of milk pancreatized for twenty-four hours, with 5 per cent. of pure dextrose. *Short and Bywaters.* 555

Renal Inflammation. DIAGNOSIS. With patient sitting erect, but relaxed, lightly palpate lumbar muscles. If one kidney is seat of an inflammatory process, muscles on that side will feel firmer than normally. *Pottenger.* 418

Rheumatism, Gonorrheal. TREATMENT. Massage of joints by physician, beginning two weeks after start of disease, recommended. Effleurage alone permissible and no pain not readily tolerable should be caused. Support extremity, cover skin with petrolatum during massage, and use whole hand. to avoid localized pressure. Repeat at least once a day and keep joint in starch bandage between treatments. Commence passive movements as soon as pain so relieved that patient can stand them—in six to eight days or sooner. Massage of prostate essential for lasting results in the large proportion of cases with prostatic inflammation. Serum or vaccine to be given conjointly. *Wolf.* 547

Rheumatism, Muscular. TREATMENT. 1. Rest in bed. 2. Liberal diet of milk, eggs, light meats, farinaceous articles and cruciferous vegetables. Buttermilk and water between meals *ad libitum.* 3. General bath daily, with temperature progressively increased. 4. Massage, after pain and tenderness under control at least twenty-four hours. 5. In lumbago or other localized muscular troubles where general methods inefficient: Acupuncture or injection directly into involved muscle of 10 c.c. of ice-cold normal salt solution. 6. Where severe pain: Salicylates, at first in large hourly doses, with sodium bicarbonate. Locally, 20 per cent. salicylic acid ointment or liniment of oil of gaultheria, followed by flannel jacket or bandages, with hot-water bottles or electric pads. *Meyer.* 484

Rhus Dermatitis. TREATMENT. 1. To prevent further penetration of poison: Soap and hot water bath of whole body; discard all clothing exposed to the poison. 2. To relieve itching, water as hot as can be borne. 3. Curative remedies: Ichthyol collodion, 5 per cent., painted on lesions three times daily. Magnesium sulphate in saturated solution, applied on gauze, covered with rubber tissue and bandage. Iodine tincture, diluted with 9 parts of water. Hot 2 per cent. (or weaker) potassium permanganate solution; remove stain with 1 per cent. oxalic acid solution. 4. Where pustules have formed: Hot mercuric chloride solution. *Von Adelung.* 300

Scalp Wounds. TREATMENT. Shave scalp for some distance around wound, either dry or wet with alcohol; after area dried, paint with tincture of iodine and wash off surplus with alcohol. In suturing use figure 8 sutures, not too tight. Where parts badly torn, provide free drainage; stitches not to be too close together. In all fractures of skull give 40 to 60 grains (2.6 to 4 Gm.) of hexamethylenamine daily. *Harper.* 119

Scarlet Fever. TREATMENT. Salvarsan used in 109 cases. Striking effect on throat symptoms, especially in necrosing form, noted. Indicated in severe toxic forms especially. Good results even upon local application. Neosalvarsan not suitable. *Jochmann and Schreiber.* 364

Sciatica. TREATMENT. Good results from X-ray treatment in 11 out of 13 cases. Rays directed usually over lumbar region, sometimes over nerve itself. Small doses only. In cases resisting ordinary medical treatment and galvanic current, radiotherapy

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should always be tried, especially when sciatica due to compression of nerve-roots. *Delherm.* Page 365

Marked improvement in 2 cases after a few daily subcutaneous injections of 1 c.c. (16 minims) of 1: 1000 epinephrin solution. *Gaisböck.* 478

Where, after relief through rest in bed, pain recurs upon movements of thigh, nerve should be exposed and examined for adhesions. Very small adhesions may be removed by nerve stretching, but where large and numerous adhesions present, careful dissection with knife necessary, and offers great chance of permanent improvement. *Lewis and Taylor* 555

Nourishing diet, with fats predominating, advised. Milk, cream, eggs, butter, marrow, bacon and oils to be given, with frequent feeding between meals, but meats to be eaten sparingly. Half an hour before each meal, give large cup of hot water containing a glycerophosphate. *Hunt.* 615

Septicemia. TREATMENT. Fixation abscess advised, consisting in injection of 15 minims (1 c.c.) of spirit of turpentine in cellular tissue of thigh, loin, or deltoid region. *Carles.* 413

Sinus Suppuration, Acute. TREATMENT. Apply 4 per cent. cocaine solution on cotton applicator, passed between end of middle turbinate and nasal wall. Follow by a cleansing alkaline solution and an oily spray containing menthol. To reduce pain and promote drainage: Hot, moist applications over whole face. Salicylic preparations, acetphenetidin, and quinine, to be used as indicated. Free catharsis. Irrigation of frontal or maxillary sinuses unnecessary unless there is trouble in antrum traceable to carious tooth. Vacuum treatment by negative air-pressure often useful. *Lemere.* 176

Sinuses, Tuberculous. TREATMENT. Tuberculin injections found effective in conjunction with other measures. Inject about 120 minims (7.5 c.c.) of 1: 500 old tuberculin solution into depths of sinus with syringe or small soft-rubber catheter, which is withdrawn as injection is being made. After 3 or 4 injections, increase strength to 1: 250 or even 1: 50, according to local and systemic reaction. *Niblett.* 617

Syphilis. TREATMENT. Following plan advised: Intravenous salvarsan injection, immediately followed by series (12 to 15) of intramuscular mercury salicylate injections, and later by 4 to 6 intramuscular injections of small doses (0.1 to 0.2 Gm.) of salvarsan in sesame oil. After this start new series of mercury salicylate injections, to be continued at increasing intervals during first year of disease. A number of the cases thus treated appeared to be cured. *Eisenstaedt.* 53

Salvarsan given intravenously in doses of 0.2 to 0.4 Gm., four to six times at weekly intervals, in 14 pregnant syphilitic women. Each gave birth at term to a living child, generally of normal weight, and none showing stigmata of the disease. *Jeanselme.* 299

Tabes Dorsalis. DIAGNOSIS. Spontaneous fractures not infrequently an initial or early symptom of tabes. *Taylor.* 54

Talipes Equinovarus. TREATMENT. Immediately after birth place strip of zinc oxide adhesive plaster over sole and inner aspect of foot, over correct position of latter, and draw plaster tightly along outer aspect of leg. Place second strip over sole just posterior to base of metatarsals, extending over inner aspect of foot and ending over joint of great toe. Draw firmly, apply to outer side of leg 1 to 2½ inches above external malleolus, and wrap around leg in ascending spiral. Place further strips to cover and tighten the second tension strip, beginning on leg 2 inches above ankle and overlapping until instep reached. Renew dressing, after cleansing foot with ether and alcohol, ten days or two weeks later. Deformity will be corrected in 6 or 8 weeks. Leave foot with stiff-ankle infant-shoe, with 1 strip of adhesive on outer side of foot and leg. *Allen.* 178

Tapeworm. TREATMENT. Thymol in cachets of 0.25 Gm. (4 grains) to be given in the morning on an empty stomach for eight days. Worm usually expelled on third or fourth day. Twenty-three cases treated with success. All alcohol to be stopped during treatment. *Artault.* 366

Tetanus. TREATMENT. Case in which spasms were controlled, sleep procured and feeding with milk rendered possible by repeated intravenous infusion of 15 to 30 c.c. each of ether and paraldehyde in normal saline solution. Produced prompt hypnosis, followed by relative muscular relaxation for several hours. *Atkey.* 556

Tetany. PROPHYLAXIS. In pregnant and puerperal patients and after gynecologic operations, when Chvostek's sign positive and symptoms such as paresthesia of hands, itching, pains in fingers in sewing or writing, and muscular weakness or stiffness present, give calcium chloride in following form: Calcii chloridi (puriss.), ʒv (20 Gm.); syrupi menthæ piperitæ (vel syrupi rubi idæi), ʒij (60 Gm.); aquæ destillatæ, ʒx (300 Gm.). Dose of calcium chloride to be carried as high as 75 to 90 grains (5 to 6 Gm.) a day in adults and, in newborn infants, to 15 grains (1 Gm.). *Kehrer.* 365

Tinnitus Aurium. TREATMENT. To relieve stuffiness of Eustachian tube—the most frequent cause of tinnitus—inject in it with catheter a 2 to 5 per cent. solution of dionin, using sufficient force to cause it to enter tympanic cavity. *Randall.* 491

Tonsillitis. TREATMENT. Following measures used in severe follicular tonsillitis and streptococcic sore throat: 1. Mixed streptococci vaccine subcutaneously. 2. Silver nitrate solution, gr. lxxx-f3j, applied to tonsils once or twice daily. 3. Mild antiseptic gargle, used every two hours or oftener. 4. Calomel

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in fractional doses, until free catharsis occurs. 5. Ice-bags, as needed. 6. Salicylates and Dover's powder, to reduce temperature and quiet pain. 7. Plenty of fluids—water, milk, lemonade. 8. Acetylsalicylic acid, locally and internally. *Goldstein.* 405

Toxemia of Pregnancy. TREATMENT. Free administration of oxygen seemed useful in a number of cases, some severe. May be given either by inhalation or subcutaneously. internally. *Goldstein.* Page 405

Tuberculosis, Articular. TREATMENT. Thyroid substance indicated in sluggish cases, especially if evidences of thyroid inactivity present. Dose should be only 1/6 to 1/2 grain (0.01 to 0.03 Gm.) *pro die*, and patient watched for tachycardia. *Lereboullet.* 179

Tuberculosis, Laryngeal. TREATMENT. Submucous cauterization found to heal 70 to 85 per cent. of cases. Performed with electric cautery. Easier than curettage, and there is no bleeding. Not suited, however, for superficial ulcers on posterior wall, particularly those on the cords, which do better on the old method of lactic acid applications. *Pettit.* 237

To relieve dysphagia, place on tongue 0.3 to 0.4 Gm. (5 to 6½ grains) of dry orthoform or anesthesin powder. A few movements of deglutition, without previous admixture of saliva with the powder, cause it to descend into contact with diseased areas covering entrance to larynx, and in a few minutes patient can swallow without distress. Measure can be repeated three or four times daily for several weeks. *Hinsberg.* 418

Tuberculosis, Pulmonary. DIAGNOSIS. Value of percussion in earliest stage emphasized. With patient lying on back on couch, employ light percussion on terminal phalanx of a finger firmly pressed on spot under examination. Three characteristic dull areas on either side should be sought, which may all be present and of considerable size while apex is still very fairly resonant: 1. Opposite inner part of first intercostal space (percussing anteriorly) and inner part of suprascapular fossa (posteriorly). 2. Opposite outer part of same interspace, and outer part of suprascapular fossa. 3. In upper part of lower lobe, percussing posteriorly at end of spine of scapula, and anteriorly in second interspace. *Lees.* 54

Quantitative examination of albumin in sputum easily made and useful in diagnosis in doubtful cases. Technique as follows: To 20 c.c. of sputum as free from saliva as possible add a 3 per cent. acetic acid solution slowly, while agitating, until mucin is coagulated; add 2 parts of distilled water to sputum, shake well, filter through several layers of gauze, add a few drops of acetic acid solution, filter, and test filtrate for albumin by any ordinary test. If more than a trace present make quantitative test with Esbach's tube and multiply reading by 3 to get percentage. All active cases give positive reaction. *Works.* 117

In very early infiltration of right apex, auscultation at acromial end of right clavicle yields prolonged expiratory sound, louder spoken voice, and slightly increased whispered sound. In case of incipiency of left apex, breathing under clavicle becomes markedly bronchovesicular, with increased voice and whispered sounds. Acromial auscultation in first stage tuberculosis yields signs which, found over lung tissue, would indicate absolute consolidation, *i.e.*, signs are greatly exaggerated and made evident. Acromial auscultation also reveals râles when these would be missed or indistinct over apex. *Abrahams.* 544

TREATMENT. 1. Inhalation of following solution: Creosoti, phenolis, spiritus chloroformi, ana 3ij (8 c.c.); tincturæ iodi, spiritus ætheris, ana 3j (4 c.c.). Two Yeo inhalers to be used on alternate days, cleansed by immersion in boiling water and careful drying. Patient to pour 6 to 8 drops of solution on felt of inhaler *every hour* during daytime, and once or twice during night if awake. Petrolatum or lanolin cold cream to be smeared over nostrils and upper lip before use of inhaler at first. 2. Period of rest in bed at beginning of treatment. 3. Treat digestive disturbances. 4. Give a sufficiency of easily digested food; malted milk, dissolved in scalded whole milk, after each meal. 5. Careful disinfection of mouth 4 times daily, after the milk; antiseptic sprays for unhealthy conditions of fauces. Forty-eight complete recoveries in 70 cases thus treated. *Lees.* 54

Hydrotherapeutic measures, to be employed in 4 successive stages or steps, described: I. Ablution, beginning with water at 90° F., gradually reduced, by 2° daily until 60° F. reached; followed by drying and, if possible, exercise in open air. II. Affusion. With patient standing in water at 105° F., water at 85°, gradually reduced to 60°, is thrown over back and chest. III. Cold rub. With patient standing in water at 105°, a sheet is wrung out in water at 80°, gradually reduced to 50°, and actively rubbed till sheet warm. IV. Drip sheet. Same as last, with sheet dripping; patient rubbed and slapped for two minutes; water at 70° then poured over shoulders, and friction applied till sheet warm; same procedure rapidly repeated over other parts of body. *Baruch.* 56

Olive oil, ½ ounce (15 c.c.) two hours after each meal, increased weekly by ½ ounce up to 3 ounces, found to cause considerable gain in weight. *Bram.* 47

Sodium cinnamate subcutaneous injections found superior to cacodylates in all varieties of cases in which a general tonic effect required. Initial dose, contents of 5 c.c. (1¼ drain) ampoule, including 0.5 Gm. (⅛ grain) of the cinnamate; this to be rapidly increased by one-half, bulk of solution, however, being kept the same. Injections given daily. *Laborde.* 118

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Importance of hyperalimentation in cases of tuberculosis in pregnancy where it is decided not to empty uterus emphasized. Use of following mixture advised to increase appetite: Lysol, 1 part; ichthyol, 10 parts, and glycerin 20 parts. Begin with 1 drop and increase by 1 drop at each dose up to 30 drops, which is maintained. Preparation dropped into half tumblerful of water and taken just before meals. *Stewart.* Page 175

Four to 8 capsules, each containing 4 grains (0.25 Gm.) of liver substance, *pro die* found effective in arresting or preventing return of hemoptysis. In cases with low arterial tension and asthenia, epinephrin, 5 to 10 drops of 1: 1000 solution daily for five to ten days, followed by like period of rest, or of adrenal substance, 1½ to 5 grains (0.1 to 0.3 Gm.) daily, is indicated. Bayle secures good results by administering 100 Gm. (3½ ounces) of fresh hog spleen every day. Loeper and Esmonet advise pancreatin, 2 to 4 Gm. (3ss-j) in keratin-coated capsules of 0.25 Gm. (4 grains) each, daily in first and second stage cases, and especially in patients with involvement of serous membranes; improves appetite and general condition. *Lereboullet.* 179

Sluggish, afebrile cases of tuberculosis, especially with profuse expectoration, are often greatly benefited by creosote. *Fishberg.* 180

Addition of tuberculin to sanatorium treatment found to increase chances of clearing sputum of tubercle bacilli by about 17 per cent. in early and moderately advanced cases. *Bardswell.* 363

Treatment of cough in phthisis described: (1) For nervous cough: Swabbing throat with 30 per cent. potassium bromide solution, or taking 15 grains (1 Gm.) of this salt in water. (2) For pharyngeal cough: Gargling with betanaphtholis, gr. iij (0.2 Gm.); sodii boratis, ℥ss (15 Gm.); aquæ menthæ piperitæ, ʒvij (24 c.c.); aquæ, q. s. ad ʒxxxv (140 c.c.). If inflammation present, pharynx to be swabbed with: Cocaine hydrochloridi, gr. ij (0.12 Gm.); resorcinolis, gr. xv (1 Gm.); glycerini, ℥j (30 c.c.). Following gargle also useful: Sodii salicylatis, ʒvj (24 Gm.); antipyrinæ, ʒj (4 Gm.); aquæ laurocerasi, aquæ aurantii florum, ää ʒss (2 c.c.); glycerini, ℥iiss (75 c.c.); aquæ destillatæ, q. s. ad ʒxxxv (140 c.c.). (3) For laryngeal cough: Orthoform powder or a solution of balsam of Peru; following draught: Tincturæ bryoniæ ♏x (0.6 c.c.); tincturæ aconiti, ♏xx (0.2 c.c.); tincturæ belladonnæ foliorum, ♏x (0.6 c.c.); syrupi opii, ℥j; aquæ, ℥iv; one teaspoonful every two hours. (4) For tracheal cough: Terpini hydratis; pulveris ipecacuanhæ et opii, ää gr. ij; to be taken in cachet two or three times a day. (5) For gastric cough, 2 drops of opium tincture or 1/6 grain (0.01 Gm.) of codeine ten minutes before each meal. *Robin.* 363

Following formula recommended: Guaiacolis puri, gr. xxx-xl; quininæ hydrochloridi, gr. xx-xxv; alcoholis, ℥ij; tincturæ gentianæ compositæ, ℥iij; aquæ, q. s. ad ʒviij. Half-teaspoonful gradually increased to 2 teaspoonfuls to be given, well diluted, three times daily after meals. Guaiacol carbonate then gradually added to increase amount of guaiacol taken. Tuberculin (T. R.) also to be administered, beginning with 1/100000 to 1/80000 mgm., then doubling dose every four days if no fever followed previous dose. *Voight.* 554

Solution consisting of iodoform, 1 Gm. (15 grains); camphor, 2 Gm. (30 grains); guaiacol, 5 Gm. (75 grains); essence of mint, 30 drops, and olive oil, 20 Gm. (5 drams), injected through intercostal spaces into diseased lung tissue or cavity in 22 cases with success. In adults, 20 to 60 injections given, according to extent of disease. Dose, ordinarily 1 c.c. (16 minims), but for cavities, as much as 4 to 6 c.c. (1 to 1½ drams). Most favorable area between second and sixth ribs on either side. To reach apex, inject through second intercostal space in dorsoscapular region. *D'Amico.* 617

Tuberculosis, Surgical. TREATMENT. Use of "injectio trypsini" recommended for tuberculous abscesses of all kinds, synovial hydromata, sinuses, arthritis, etc. After an insignificant local reaction, pain, tenderness, and tubercle bacilli disappear, pus becomes more fluid and undergoes absorption, and healthy tissues proliferate. Dilute the preparation as supplied with 2 to 10 parts of sterile saline solution, inject strictly subcutaneously 1 c.c. (of pure preparation), and distribute beneath skin by gentle massage, one to three times a week. Where abscesses, puncture with trocar and inject; where sinuses, inject into surrounding tissues in several places; where ulcers, under their bases; where synovial hydromata, into the sheath, and where tuberculosis of joints, in part directly into joint, partly into surrounding tissues. Undiluted injection used in the joint cases. *Baetzner.* 301

Tympanites. PROPHYLAXIS. Hexamethylenamine found useful to prevent excessive abdominal tympany after operations. For two days beforehand, 10 grains (0.6 Gm.), dissolved in glassful of water, given every two hours between. After operation, 120 grains (8 Gm.) dissolved in 1 quart (liter) of drinking-water and given to patient in small quantities within twelve to twenty-four hours. Ten grains (0.6 Gm.) in water then given as before every two hours, 60 to 120 grains being thus administered on each of the three days following operation. Where vomiting exists, drug given by rectum. *La Roque.* 608

Typhoid Fever. DIAGNOSIS. Modified Russo test recommended: Place in a test-tube enough of a just translucent aqueous solution of methylene blue to extend just above the bowel. Then fill tube with urine and, after mixing, examine color against good

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daylight. Emerald or mint green indicates positive reaction; any tinge of blue renders it negative. Urines containing bile or blood not suitable for test, and those clouded by phosphates, urates, etc., should be filtered. Test is constantly positive in typhoid and but rarely in other conditions; negative reaction is good evidence of absence of typhoid. Appears early in the disease. *Neuman and Behrend.* Page 429

TREATMENT. Olive oil considered very useful as a food in 1- to 3- ounce (30 to 90 c.c.) doses 3 times daily. Also useful as a laxative; high injections of lukewarm oil may be given. *Bram.* 47

Collective statistics as to results of use of typhoid vaccines show 423 cases, with only 5.4 per cent. deaths. Dosage used by author: Initial hypodermic injection of 500,000,000, repeated at four-day intervals as long as required, and increased by 100,000,000 each time. Stock-vaccine injections made just under skin over insertion of deltoid or over tensor vaginæ femoris. *Callison.* 57

Series of 65 cases treated without milk, on diet consisting of broths, soups, gruels, gelatin, eggs, sugar of milk and butter. Gelatin given almost ad libitum—6 ounces of 5 per cent. solution, flavored with lemon, vanilla, etc., five times daily. Mortality low, persistent diarrhea only in 4 cases, hemorrhage in 4 and perforation in none. *Johnson and Watt.* 181

Iodine, in aqueous solution or as tincture—the latter in doses of 15 to 25 drops daily in a mixture of cinchona and malaga wines or in milk—given in 44 cases. Cases with profuse diarrhea, distention or nausea appeared to improve, rapid recovery usually occurred, and mortality seemed to be lowered. *Arnozan and Carles.* 304

Ulcers. TREATMENT. Value of dry treatment of wounds, burns and ulcers emphasized. Keeping a leg ulcer exposed to air, lightly dusted with aristol and stearate of zinc, is an effective treatment. Patient should lie down, elevate leg and protect it from flies and dust with thin layer of gauze. *Pitfield.* 285

In chronic leg ulcers, wash affected surface and surrounding area with 90 per cent. alcohol, and apply following ointment on sterile gauze, with firm bandage from foot to knee: Acidi borici, ʒij (8 Gm.); adipis lanæ, petrolati, ana ʒij (60 Gm.). Repeat washing with alcohol next day, give whole leg massage with alcohol and stiff brush, and reapply ointment. After a few days, scrape base and edges of ulcer clean. Use the wool-fat ointment for two or three weeks, then 5 to 10 per cent. thymol iodide in cold cream. Continue alcohol treatment, and cauterize granulations with silver nitrate if necessary. *Wade.* 356

Urethritis, Gonococcal. TREATMENT. Fluidextract of aconite recommended for relief of congestion and irritation; 1 minim every one or two hours for intelligent patients and every three or four hours for unintelligent. Interval to be doubled as soon as tingling, perspiration and a feeling of relaxation appear. *Pedersen.* 305

Anesthesia of urethral mucous membrane can be completely and satisfactorily produced by 1: 2500 or 1: 5000 potassium permanganate solution. Found useful to reduce sensitiveness before passing sounds in stricture. *Barton.* 557

Urticaria. TREATMENT. Epinephrin given subcutaneously in doses of 8 minims (0.5 c.c.) in 6 cases. Two doses always caused complete fading of rash and cessation of itching in ten to twenty minutes. Recurrence probable in an hour or two unless treatment continued. *Swann.* 164

Vaccinal Ulcers. TREATMENT. Constant application of antistreptococcic serum as a wet dressing, covered with oiled silk, to indolent ulcers resulting from extraneous infection of vaccination site, recommended. Remove oiled silk and remoisten dressing, without disturbing it, three or four times daily. *Sexton.* 492

Vincent's Angina. TREATMENT. In mild cases, best results from use of trichloracetic acid. Membrane first removed by hydrogen peroxide and wiping with cotton swab; ulcer then anesthetized with 10 per cent. cocaine solution, and trichloracetic acid applied a few minutes after. Usually 3 or 4 applications at 2- or 3- day intervals necessary. Tincture of iodine preferable where ulceration extensive. For pain, orthoform. Carious teeth to be cared for. General condition also to be improved. *Halstead.* 58

Vomiting. TREATMENT. In a number of instances vomiting can be immediately arrested by means of the pyloric reflex of dilatation, which consists of pressure or concussion of the fifth dorsal spine. *Abrams.* 394

Vomiting of Pregnancy, Pernicious. TREATMENT. Sodium bicarbonate, 5 to 50 grains (0.3 to 3 Gm.) a day, recommended. Part of it often vomited, but some retained. Continue for a week after vomiting stopped. Bowels to be well cleared by colonic flushing. Veronal also found useful. *Lyon.* 59

Whooping-cough. TREATMENT. Pertussis bacterin used in 40 cases. Disease not shortened, but bacterin causes, after preliminary slight aggravation, well-marked, and sometimes remarkable, symptomatic improvement in a certain proportion of cases. Best results produced at the height of the disease. Give 2 or 3 full doses—20 to 50 million bacteria each—at five-day intervals. In young infants moderate doses should be given early; they diminish severity of disease and minimize complications. *Zahorsky.* 48

Pertussis vaccine used in 17 cases. Best dose found to be 40 million bacteria, given in

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buttocks even to an infant twice a week, or in severe cases in old children, 3 times a week for one week only. If much benefit noted, intervals prolonged, and vice versa. Many cases improved after single dose. No reaction from injections, local or general. Vaccine should be used only in undoubted cases of the disease. The younger the infant, the more rapid the cure. *Scott.* Page 174

1. Following preparation recommended: Ichthyolis, ℥iiss (10 Gm.); glycerini, ℥ss (15 Gm.); liquoris calcis, ℥iiss (10 Gm.); olei amygdalæ amaræ, gtt. iij; olei anisi vel menthæ piperitæ, gtt. x; syrupi, q. s. ad ℥iiiss (100 Gm.). Dose in children up to 1 year of age, 4 to 6 teaspoonfuls; up to 2 years, 3 to 4 dessertspoonfuls; 3 to 4 years, 4 to 5 dessertspoonfuls; 5 years and upward, 4 to 5 tablespoonfuls. These doses can be exceeded in obstinate or long-standing cases, or those complicated with capillary bronchitis or bronchopneumonia. 2. As adjuvant in young children: Instillations of weakly mentholated oil in nose. 3. Emetic and purge at beginning of treatment. 4. If bronchopulmonary complications should appear: Mustard baths and antiseptic inhalations. 5. Where hemoptysis: Inject diphtheria antitoxin and, this failing, hepatic extract. *Naamé.* 306

Wounds. TREATMENT. Treat all wounds on which great force has been exerted, and especially those contaminated by soil and dirt-covered objects, as if infected with gas bacilli. Leave open where possible and irrigate thoroughly with peroxide. Bandage lightly, if at all. Inspect frequently and irrigate often. On first sign or symptom of infection, take smear and examine for *B. aërogenes capsulatus.* Open wound freely, if sutured, and if on limb place latter in bath or irrigate continuously. If condition extensive, expose field widely to air by free incisions. (Do not employ peroxide in full strength or inject in confined spaces or directly under tissues.) *Cramp.* 42

Wounds of face and hands should be closed with subcuticular stitches, especially in women. To prevent subsequent stretching of scar, close superficial fascia with interrupted fine silk sutures before applying subcuticular stitches. After injuries to soft parts of hand, cleanse quickly by immersing in gasolene; after latter has evaporated, sterilize parts with tincture of iodine and alcohol. *Harper.* 119

Application, in gunshot wounds, of steaming towels wrung out in water as hot as can be borne, during thirty minutes night and morning before wound is dressed, recommended. To be continued till all inflammation subsides. *Griffith.* 110

Use of paste made by adding a few drops of mercury bichloride and ammonium chloride solution (1:2000) to small quantity of zinc oxide recommended for slight wounds, abrasions, injection punctures, indolent ulcers, sores about the face, etc. Where much stinging and itching about abrasions, substitute 2 per cent. phenol for bichloride. *Hiden.* 182

Scarlet red ointment, 2 to 4 per cent., advised for acceleration of healing in granulating postaural operative wounds, after radical removal of rodent ulcers, etc. *Allan.* 359

Glucose used as dressing in 100 cases, including acute and chronic osteomyelitis, extensive putrid foci, infected wounds, varicose ulcers, drainage wounds after operations, etc. Pronounced disinfectant, detergent, and deodorant effects, with tendency to cause prompt healing, noted. *Magnus.* 618

Book Reviews

A COURSE IN NORMAL HISTOLOGY. By Rudolf Krause, A. O. Professor of Anatomy at the University of Berlin. Translation from the German by Philipp J. R. Schmall, M.D., New York. Parts I and II. Octavo Volumes of 86 and 406 Pages, respectively. With 30 Illustrations in the Text and 208 Colored Pictures, Arranged on 98 Plates. New York: Rebman Company, 1913.

Part I of this beautiful work is devoted to a description of the microscope and its proper use and care, methods of preservation of specimens, the preparation of sections, staining methods, methods of injection and mounting, finishing, mensuration and drawing of microscopic preparations. A large number of staining methods are described, including the methylene-blue vital staining of nerve tissue, the various silver impregnation methods, etc. The aim is to afford to the student sufficient technique to enable him to prepare, from any given organ, a specimen clearly showing its structural peculiarities.

Part II, forming much the bulkier volume of the two, contains a large series of colored histological drawings, made by Prof. Krause himself, with accompanying text. As is customary in works on histology, the individual cellular element is described first, next the fundamental classes of tissue in the animal body,—epithelia, connective tissue, cartilage, bone, etc.,—and finally, occupying about two-thirds of the volume, the histology of the various organs. Preceding each plate is text describing the specimens illustrated, with an explanation of the technique employed in their preparation. Both low power and high power reproductions of each of the more important organs are given. Most of the specimens are representative of human histology, though some from other species have been introduced for comparative

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purposes, especially in the earlier sections. With few exceptions the drawings show evidence of much care to secure good definition and accuracy of detail. The coloring corresponds accurately with that seen in stained specimens. One point deserving adverse criticism is the lack of adequate illustrations of lung tissue, the two given appearing meager in comparison with those representing other organs. With this exception the book seems to be very complete and undoubtedly supplies an excellent foundation in normal histology for subsequent pathological work, including that on the nervous system.

DISEASES OF THE EYE. By George E. de Schweinitz, A.M., M.D., Professor of Ophthalmology in the University of Pennsylvania. Seventh Edition, Thoroughly Revised. Octavo of 979 Pages, with 360 Text Illustrations, and 7 Lithographic Plates. Philadelphia and London: W. B. Saunders Company, 1913. Cloth, $5.00 net; Half-morocco, $6.00 net.

The new edition of this excellent textbook appears only three years after the preceding —sixth—edition; yet numerous additions have been rendered necessary by the advances made in ophthalmology during that time. Thus, new paragraphs appear on Schiötz's tonometer; ophthalmodiaphanoscopy; sporotrichosis of the eyelids and conjunctiva; Widmark's conjunctivitis; rosacea keratitis; epithelial dystrophy of the cornea; marginal degeneration of the cornea; blue sclerotics; exudative retinitis (Coats's disease); angiomatosis retinæ (von Hippel's disease); blindness from the arylarsenates; Siegrist's method of local anesthesia; Reese's muscle resection operation, etc. Due reference is made to vaccine therapy in gonorrheal iritis, to the indications for the administration of salvarsan in ocular disorders, and to the septic (bacterial) origin of iritis and uveitis. The former text has also been revised, and some new illustrations introduced. The work may, as in the past, be warmly recommended.

MASSAGE, MANUAL TREATMENT, REMEDIAL MOVEMENTS. By Douglas Graham, M.D., Consultant and Instructor in Massage, Boston, Mass.; Member of the American Association for the Advancement of Science, etc. With a Chapter on Massage of the Eye, by Dr. A. Darier, Paris. Fourth Edition, Revised and Enlarged. Octavo of 574 Pages, with 75 Illustrations. Philadelphia and London: J. B. Lippincott Company, 1913.

The first edition of this book, which is largely a record of the personal experience of the author in the employment of massage, was published in 1884 and was, the author believes, the first on this subject to appear in the English language. Since then, the field for this form of therapy has largely increased, and the present volume compares in portliness with many other textbooks on special branches of medicine. The history of massage is first taken up, next the mode of applying massage in the different regions of the body, and after this the physiological effects of massage, including its action upon the skin, muscles, circulation, blood, lymph-flow, secretions, and nervous system. The remaining large portion of the volume is taken up by a description of the uses of massage in various abnormal conditions, beginning with the neurasthenia and anemia of women, followed by neurasthenia in either sex, uterine affections, heart conditions, pneumonia and whooping-cough, chronic hepatic hyperemia, atony of the stomach and intestines, movable kidney, hemiplegia, tabes, progressive muscular atrophy, Raynaud's disease, angina pectoris and arteriosclerosis, writer's cramp, neuralgia, muscular rheumatism, Dupuytren's contraction, spinal curvature, rickets, weak foot, sprains and dislocations, synovitis, joint affections, affections of the head and special sense organs, etc. The book is written in a conservative, modest tone, contains numerous accounts of cases illustrating the utility of the procedures recommended, and is clearly and entertainingly written. Many of the observations referred to date back to the eighties, but some notice of recent literature is also apparent. Above all, the book is based on the author's own practical work. It affords a very comprehensive review of the possibilities of massage, and will prove very acceptable to the practitioner desirous of improving his knowledge of this useful therapeutic measure.

PATHFINDERS IN MEDICINE. By Victor Robinson. Pp. 317, with Illustrations. New York: Medical Review of Reviews, 1912. Cloth, $2.50.

This work, dedicated to the veteran scientist, Ernst Haeckel, whose letter of acceptance appears on page 3, consists of a series of biographical sketches of various pioneers in medicine, already published in various issues of the *Medical Review of Reviews* and other perodicals. Those considered include Galen, Æsculapius, Paracelsus, Servetus, Vesalius, Paré, Scheele, Cavendish, Hunter, Jenner, Laennec, Simpson, Schleiden, Schwann, and Darwin. Each history is not merely a biography, but reflects much of the nature of medical thought and practice at the time, while in the case of Scheele, Cavendish and Darwin the realm of chemistry and other sciences related to medicine is entered. The book is written in a conversational style, displays a considerable amount of research as regards the environment and contemporaries of the "epoch-makers" discussed, and is well worthy of a place in every medical man's library.

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The General Field

Conducted by A. G. CRANDALL

Getting Wise Fast

A noble army of novelists of a certain type, dramatists of the same type, only more so, and women whose domestic duties are limited, have for a considerable time been deploring the sad state of ignorance of the intricate facts of sex said to prevail among young children and adolescents.

Judging by the extensive propaganda now being turned loose there will not long be many instances of ignorance.

However much we may respect the motives of those who are sincere in their belief that it is good policy to tear aside the veils which have been instinctively thrust forward to shield the immature minds of young children in the past, there can be very little but disgust aroused when the Theater Trust rushes in, eager to commercialize this problem.

The Morning Peeve

It is a somewhat sad truth that many people feel the weight of their trials and tribulations most just about the time they acquire consciousness in the early morning hours; in other words, although they may be quite amiable at other times, they are peevish in the morning.

In just what temperament Mr. O'Keefe might habitually be at other times of the day, he certainly felt peevish about 5 o'clock on the morning that he chanced to saunter through Chinatown after a night devoted to the pursuit of pleasure. He was in no humor to be jostled by even the most amiable Chinaman, and when one of these children of the Orient brushed against him with a tray of chop-suey, things happened. Mr. O'Keefe didn't like the odor of the chop-suey and didn't care for breakfast any way. He accordingly, with the agility of a ballet dancer, kicked the tray high in the air. Of course, it was really Mr. O'Keefe's miscalculations that caused the contents of the tray to descend in a shower upon him instead of upon the Chinaman, but he was unreasonable enough to blame the owner of the tray and immediately engaged him in battle.

A policeman languidly protested and, being unfortunate enough thereby to add to Mr. O'Keefe's annoyance, the latter turned his attention upon the officer, in consequence of which the "judge" sent the man with the peeve away five days for reflection.

The morning peeve is a bad habit and there are a great variety of disagreeable ways in which it may manifest itself. The physician who could discover a remedy that would eradicate this sometimes constitutional trouble would confer a great benefit upon society.

A Difficult Problem

Among numerous other burning questions of New York City, the problem of the married woman teacher is not the least absorbing.

Female teachers of the New York public schools succeeded a year or two ago in having a law put through which gives them the same compensation that the men teachers have. This they consider to be a great victory and echoes of their jubilation were heard far and wide.

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There has been some complaint, however, that since this law went into effect there has been a tendency among the school authorities to hire a larger proportion of men than women. This has caused a good deal of dissatisfaction, but it is a matter of minor significance compared with the transcendent problem now looming up for settlement, viz., whether or not the married woman teacher may retain her position and incidentally have occasional extended vacations when the stork is hovering about.

An enormous amount of printer's ink has been devoted to this question, but it seems to be no nearer a settlement.

The prevailing view of educational boards seems to be that when a woman teacher marries and has children of her own she should be willing to devote her energies to domestic pursuits and allow some other woman, less fortunate, to take her place as teacher. In all probability the opinion of the educational authorities will prevail. But there is provided an opportunity for those of a disputatious turn of mind to air their views as to the code which allows a woman teacher to marry and still retain her occupation, but forbids her to enjoy the incidental privileges of motherhood.

What Usually Happens

A wealthy man in Illinois was fond of trees and during his lifetime preserved with great care a black walnut grove of 400 acres, allowing no timber to be taken out for any purpose whatever. After his death his son, who was also a conservationist, maintained the *statu quo*.

Now the son has died and the estate has come up for legal settlement. In accordance with the prevailing sentiment of the times and strict business logic, the timber has been sold and the famous tract of woodland, which had long excited the envy of lumbermen, will be denuded with neatness and dispatch.

All over the country this same thing is happening. In occasional instances, for a generation or two, the hand of the lumberman is stayed, but sooner or later he prevails. Instead of culling out the larger trees and saving the young and thrifty ones the lumber hog makes a clean sweep.

That such a policy is contrary to the public good and greatly to be deprecated is admitted by practically all except the lumbermen. It is no longer a question as to how long this system of organized vandalism may continue. It is plain to see that within a comparatively few years there will be little or no standing timber to be found anywhere throughout the United States, with the exception of the forest reserves acquired through purchase by the various States.

There are few citizens however, who, would have the courage to raise any vigorous form of protest against a policy so absolutely contrary to common sense and the general good.

A Little Appreciated Privilege

When we consider the enormous cost of human blood in what is now known as individual and political liberty, it is hard to comprehend what is so commonly known at the present time as political "apathy."

There was recently an election in Italy, an election which was representative of what enlightened people were striving for centuries to secure. Yet, because the day was fine, the occasion was construed as a holiday, multitudes of voters going off on excursions and paying no attention to the election.

A large proportion of the grumbling and recrimination associated with politi-

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cal life in this country emanates from a class of voters who are sadly prone to neglect their duties on election day.

Those who esteem an electoral privilege lightly should turn their gaze southward and see what is going on in Mexico. Persistent neglect of the voting privilege in any country may result in similar conditions.

The spellbinder's quotation of that ancient sentiment "eternal vigilance is the price of liberty," probably conveys more truth than most of the other statements made by the same orator.

What Next

It is somewhat amazing to read of the proposed law now pending in Congress that will prohibit the shipment in Interstate Commerce of beef animals under two years of age.

The intent of the bill, of course, is to handicap the farmer in disposing of his partly grown stock in order that he may be compelled to let his calves and yearlings grow up to maturity.

It would be interesting to note the political effects of the passage of such a law, unconstitutional though it would be. While farmers might disagree as to the best methods of preparing soil for the raising of different crops, there would certainly be no lack of unanimity as to their political action.

It is singular, in view of all the wise theorizing which is now going on as to the reasons for high cost of foods, that few, if any, of the savants discussing this problem ever touch upon the greatest agricultural problem of all, viz., the difficulty of inducing reasonably reliable men to engage as farm laborers. A multitude of farm owners are neglecting their lands and allowing stock raising to drop to a low level because of the difficulty of securing farm laborers at all, and especially because of the jaunty indifference of those who may possibly be persuaded for a reason to do farm labor for hire.

Let the congressional experts figure out some system of providing farm laborers with a pension after a certain number of years' service. This might help the situation somewhat.

The Sedentary Dog

Most members of the dog family are built for locomotion. It takes quite a number of miles to constitute a proper amount of daily exercise for the average dog. When a considerable number of people now interested in eugenics and other race improving theories have the time, they had better take up the question of the dog with sedentary habits. He is often more dangerous than the straggler.

The old joke about the family poor enough to keep several dogs has long since been retired. The dog is usually found in largest numbers in locations where there are the fewest children.

It is true that the dog is an affectionate animal, but that statement refers to the healthy dog. There is no reason to suppose that the kind of a life which would make a human being dyspeptic, toxic and crabbed should not produce a similar effect upon the dog, and the opportunity for healthful exercise for the pampered canine pet of the childless married woman of the apartment is usually lacking.

The sedentary dog, deprived of normal exercise and usually fed far beyond his physiological needs, is a menace wherever found.

Brusqueness as a Fine Art

The contrast between the offhand and ofttimes brusque mannerisms of the old reliable family doctor and the bland, in-

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sinuating civility of many people engaged in retail trade is one of the agreeable phases of modern life.

There are many doctors who have a hard-enough time to make ends meet and whose bank account, compared with that of a reasonably successful shopkeeper, is small indeed. Yet, to his everlasting credit be it said, the average doctor does not sell his dignity.

The village doctor was standing on the steps of a drug-store smoking a long, black cigar. He had made his morning rounds and his carriage stood by the curb. The village bore, who had long ago retired on a competence, approached the doctor just as a funeral procession wended its way along.

"Whose funeral is that, doctor?" was the query. The doctor mentioned the name of the departed. "What, is *he* dead?" was the second inquiry.

"His friends must be a blamed hard-hearted set to bury him if he isn't dead," remarked the doctor without shifting his gaze.

Laxity in Dispensing Drinks

A young lady of good family connections recently accused a young man of a much more prominent family of having stabbed her in an automobile. Subsequently she amended her declaration by stating that she had drunk so much champagne that she did not really know what she was doing when she made the accusation. Incidentally she stated that the young man had drunk as much, if not more, than she had. Neither of these young people is over 22 years of age.

It is the hardest thing in the world to be consistent, and the law which establishes an elaborate system of penalties and makes no attempt to punish those guilty of contributory negligence is unscientific and grotesque.

It should not be possible for young people of school age to procure intoxicants, apparently without restriction.

Wines and liquors have their legitimate place, but their use is not legitimate among irresponsibles. Those who sell to boys or girls or to habitual drunkards, or to those who are manifestly under the influence, are dangerous enemies to the public good and should be regulated accordingly.

In most States and municipalities, even where saloons are licensed pretty freely, there is a plenty of laws governing such misdemeanors, but unfortunately they are seldom executed; and it is in such laxity that the chief abuses of the liquor traffic are to be found.

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Original Articles

RECENT IMPROVEMENTS IN THE QUININE TREATMENT OF LOBAR AND LOBULAR PNEUMONIA:

The Auxiliary Use of Cocaine, Posterior-Pituitary Extract, and Bacterial Products.*

BY SOLOMON SOLIS-COHEN, M.D.,

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PHILADELPHIA, PA.

THAT acute pneumonia, and especially acute lobar pneumonia, has for many years occupied first place in the dangerous infections of the temperate zone is so well known that it has become unnecessary to cite statistics. Twenty-five or thirty years ago the mortality of acute lobar pneumonia was usually stated to be about 25 per cent. under all circumstances, and the tendency of systematic writers was to teach that treatment, apart from good nursing and the meeting of certain symptomatic indications, exerted but little influence. On the other hand, many medical men not occupying official positions, and especially those who practised in country districts, expressed great faith in the influence of certain special methods of treatment, and looked on a mortality of over 10 per cent. as excessive.

Recent mortality statistics as collated by G. A. Gibson[1] are, however, even more unfavorable than those given by teachers and writers of a generation ago. Gibson's figures are taken from the mortality returns of Great Britain, and from the papers of Wells, Musser and Norris, Beddard, Rychner, and other American, British, and Continental writers, and from many of the leading hospitals of

* Read at the Fourteenth Annual Meeting of the American Therapeutic Society, held in Washington, D. C., May 5 and 6, 1913.

[1] Gibson, G. A.: "Acute Pneumonia, its Prognosis and Treatment," Glasgow Med. Jour., May, 1911.

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the world. The death-rate over a period of forty years, as given by the various sources and authorities cited, ranges between 20 and 22 per cent., but, if the last decade alone be taken, it is between 30 and 40 per cent. Thus in the Massachusetts General Hospital, according to Wells, it was 18 per cent. in 1822 and 30 per cent. in 1903. In the Boston City Hospital it was 21 per cent. in 1865 and 39 per cent. in 1903; in the Cincinnati Hospital, 31 per cent. in 1866 and 43 per cent. in 1903; in the Wiener allgemeines Krankenhaus, 18 per cent. in 1840 and 27 per cent. in 1899; in the Glasgow Royal Infirmary, 16 per cent. in 1831 and 30 per cent. in 1900. From his own wards Gibson reported a mortality, during the last ten years, of 31.9 per cent.

The classes of cases treated in different hospitals differ so much, and age, sex, race, social status, and personal habits of the patient count for so much, that comparison between various series of statistics would teach but little. Moreover, it is well known not only that there are seasonal variations, but also that in certain years the attacks are much more severe and the fatalities correspondingly greater than in other years. Still, the fact is evident that all over the world the percentage mortality of pneumonia is increasing, and reference to any volume of vital statistics will show likewise that the number of cases reported is steadily rising. Improved diagnosis may account for this last, in part; but it would tend to lower, rather than to increase, the reported mortality percentage.

From the experience of any one observer, sweeping conclusions cannot be drawn. Nevertheless, it is worth while to continue to direct professional attention to the comparatively favorable result (that is, a much reduced mortality, ranging from 9 to 20 per cent.)[2] that attends a special method of treatment systematically carried out during the last decade at two hospitals[3] receiving quite different classes of patients, as well as in private and consultation practice; that is, carried out not only during the time of greatest general increase in mortality, but also under a great variety of conditions as regards persons, environments, seasons, years, and other factors.

The underlying principle of this method of treatment is not new; and while its systematization, which has been gradually worked out since 1904, in my hospital services, partly at Jefferson Hospital and partly at the Philadelphia General Hospital, contains some original features, the object of this paper is not to claim priority, but to try to gain a wider use for certain life-saving measures.

During the last few years the roof wards at Jefferson and the galleries at Blockley have offered improved facilities for obtaining that constant supply of fresh air which is an integral part of the method, and the more favorable showing for this period may be attributed in part to that factor. The attempt was

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2 Solis-Cohen, S.: Trans. Assn. Am. Phys., 1911, xxvi, 169; Am. Jour. Med. Sc., January, 1912, N. S., cxliii, 40; Internat. Med. Clinics, Series 22, iii, 56.

3 At the Philadelphia General Hospital any mortality under 50 per cent. is quite favorable, owing to the large number of alcoholics and neglected cases, etc., there received. Also its records are imperfect for many reasons.

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always made, however, to secure ample ventilation of the wards or special rooms in which the pneumonia patients were placed, so that the difference, after all, is not the great disparity between air and no air, but that moderate but still important difference between well-aired rooms and the open air. There is a difference also between a roof constantly covered with an awning and one open for the most part to the sky. The "blue sky" method is by far the best; it is preferable to let down the awnings only under stress of stormy weather.

The bed-clothing should be ample, and, if needed, heating-pans, etc., be employed. Distinction must also be made between catarrhal and croupous pneumonia in this respect: that whereas in lobar pneumonia, as a rule, the body should be kept warm and the air entering the lungs should be cold, in bronchopneumonia it is often desirable to have the air *warmed* as well, even up to 80° F. with children, the aged, and the feeble especially. Also in some cases of lobar pneumonia (in aged patients, or in alcoholic subjects especially) the air that is breathed must not be too cold. This is a matter for careful judgment in each case.

Apart from fresh air, dependence has been placed on the following measures:

First, the *effective* use of *massive* doses of quinine. The most potent preparation, namely the very soluble double hydrochloride of quinine and urea, has been chosen, and one of the most active methods of administration, namely, intramuscular injection of a 50 per cent. solution, is employed.

Second, the hypodermic injection of cocaine hydrochloride solution or of an extract of the posterior lobe of the pituitary body[4] for the maintenance of blood-pressure.

Third, in cases of prolonged fever, delayed resolution, or tardy convalescence, the injection of bacterins (pneumococcus or "mixed" vaccines, personal or stock) has been resorted to, in an endeavor to expedite recovery, and apparently with good result. Further experience with this is needed before positive general statements can be made. But in special instances the good influence has been striking.

The details of the treatment may thus be summarized:—

On admission, so soon as the diagnosis is verified, the patient, if a fairly strong adult, receives under proper precautions[5] an intramuscular injection of from 1 Gm. (15 grains) to 1.6 Gm. (25 grains) of the quinine and urea salt in 50 per cent. solution in hot sterile water. Children, the aged, and the feeble receive smaller doses. The injection is repeated, but rarely with a greater dose than 1 Gm. (15 grains), every third hour until the temperature falls, and remains, below 102.2° F. One-half grain (0.03 Gm.) of cocaine hydrochloride or of caffeine (sodiosalicylate) or 1 c.c. of pituitary liquid (representing 0.2 Gm. of fresh posterior lobe) or 1 c.c. of a 1:1000 solution of the posterior

[4] More recently I have been using a preparation termed "hypophysin"—a 1:1000 solution of the active principle of this structure. It seems to be even more potent than the extract.

[5] The skin is to be painted with tincture of iodine; the injection made deeply; the syringe emptied, so that there will be no dripping over the skin on withdrawal of the needle, and the point of puncture sealed with collodion or iodoform-collodion.

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pituitary principle is injected hypodermically at the same time with the first dose of quinine, and repeated, likewise, every third hour, until the curve representing systolic blood-pressure in millimeters of mercury (taken in the arm), rises and *remains above* the curve representing pulse frequency in beats per minute.

This latter practice is founded on the observation of G. A. Gibson, of Edinburgh, concerning the prognostic significance of the relation between pulse frequency and blood-pressure, thus charted. I have proposed to call this relation the Gibson pulse-pressure ratio, and trust that the suggestion will be adopted, as a worthy means of perpetuating the memory of that great clinician, whose recent demise is so marked a loss to medicine.

The injections of quinine are governed in part by the temperature and in part by the general symptoms. The injections of cocaine, caffeine, or pituitary preparation are governed chiefly by the pulse-pressure ratio, but also by the general character of the pulse and of the cardiac action, the renal activity, and the general symptoms. Sometimes these agents are alternated; sometimes camphor (2 to 10 grains in sterilized olive oil) is used as an adjuvant or temporary succedaneum. I have also used epinephrin, atropine, strychnine, and even digitalis preparations and principles on occasion. But the routine is usually cocaine and the pituitary preparation.

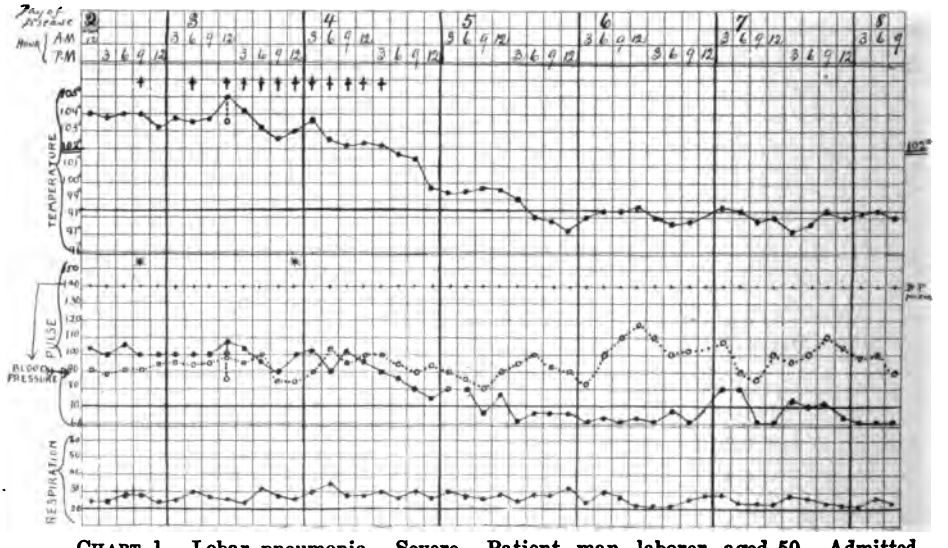

CHART 1.—Lobar pneumonia. Severe. Patient, man, laborer, aged 50. Admitted second day. Deep lesion, middle right lung. Quinine and urea salt 12 Gm. (180 grains) in forty-two hours. Cocaine salt, 2 injections 0.03 Gm. (½ grain) each. Defervescence by lysis, complete fifth day. Sputum, rich culture pneumococci. Relatively low leucocyte count (14,000) increased following quinine injections (20,000). Polymorphonuclear percentage increased from 75 to 80. Resolution began eighth day; complete fourteenth day. Each plus sign (+) indicates an injection of quinine and urea hydrochloride 1.0 Gm. Each star (*) indicates an injection of cocaine 0.03 Gm. The vertical chain of dashes and circles indicates sponge and result. The line composed of dots and circles indicates systolic blood-pressure in millimeters Hg.

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Creosote carbonate is sometimes administered by mouth during or after the course of quinine, if called for by special symptoms; less frequently (in cases in which extremely viscid sputum is expectorated with difficulty) ammonium salts (usually bromide, acetate, or carbonate) or terebinthinates are given, or inhalations of appropriate vapors instituted. In other words, special symptoms are relieved when necessary. But this is not an invariable part of the routine.

No invariable maximum limit has been fixed to the number of the injections of quinine, of cocaine or of pituitary liquid, but it has not been considered wise to continue the three-hourly injections beyond the first twenty-four hours, and in but few cases has it been necessary to continue them so long as this. In those cases in which the desired effect, as indicated by temperature or by the Gibson blood-pressure pulse rate relation, has not been reached within the first twenty-four hours, the interval between the injections has been increased to six hours. When the effect is gained, the repetition of the doses depends on the maintenance of it.

In general, the effort is made to give as much quinine as is necessary and can safely be borne within the first forty-eight hours, and as little cocaine or pituitary or camphor, etc., throughout the treatment, as is necessary to maintain the systolic blood-pressure curve at a safe distance above the pulse-rate

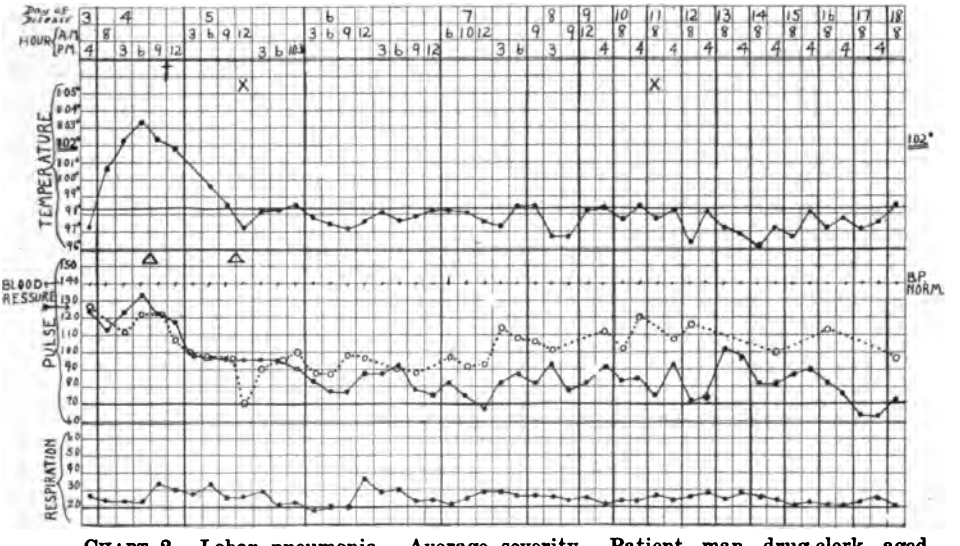

CHART 2.—Lobar pneumonia. Average severity. Patient, man, drug-clerk, aged 38. Admitted third day. Extensive consolidation, left base. Associated pleurisy. No effusion. Early defervescence, with delayed resolution. One injection quinine and urea salt. Two injections pituitary extract. Two injections pneumococcic bacteria. Leucocyte count 22,000; polymorphonuclear 70 per cent. Increased following first bacterin injection to 34,000; polymorphonuclear 80 per cent. Resolution began two days after second bacterin injection, eleventh day of disease. Complete twenty-second day. Each plus sign (+) indicates an injection of quinine and urea hydrochloride 1.2 Gm. Each × indicates an injection of pneumococcus bacterin. Each triangle (△) indicates the use of pituitary (posterior lobe) extract. The line composed of dots and circles indicates systolic blood-pressure in millimeters Hg.

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CHART 3.—Double lobar pneumonia. Severe. Extensive consolidation both bases. Patient, man, peddler, aged 36. Admitted almost moribund, sixth (?) day. Seven injections quinine and urea salt. Eleven injections camphorated oil. Nine injections pituitary extract. Nine injections cocaine salt. Seven injections strychnine salt. Defervescence completed on nineteenth day. Resolution began seventeenth day; completed twenty-seventh day. Each plus sign (+) indicates an injection of quinine and urea hydrochloride 1.2 Gm. Each star (*) indicates an injection of cocaine 0.03 Gm. Each double dagger (‡) indicates the use of 30 minims camphorated oil. Each circle indicates the use of 0.002 Gm. strychnine sulphate. Each triangle (△) indicates the use of pituitary extract (1 c.c.=0.2 Gm. posterior lobe). The line composed of circles and dots indicates systolic blood-pressure in millimeters Hg.

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curve. Proper attention is given to the excretions and to the quality as well as quantity of the urine. Saline infusion, alkaline-saline beverages to the point of keeping the urine alkaline, external applications of heat by flaxseed poultice, electric heating pad, or cotton or lamb's wool jacket, and in rare instances oxygen inhalation are among the auxiliary methods employed routinely or in selected cases. But it is unnecessary to dilate on these, or on the details of diet and nursing, which are to be taken for granted.

The title of this communication is "Recent Improvements in the Quinine Treatment of Lobar and Lobular Pneumonia." To these alone is special attention called. Other matters are incidental and explanatory. The improvements to which reference is made are the use, in an almost routine way, of cocaine and pituitary liquid, and the addition of the pneumobacterin injections after the most acute symptoms have been controlled. I have elsewhere discussed the philosophy of the treatment, and may here be brief.

The change in the character of the defervescence from crisis to lysis, as exemplified by many charts which I have published and by those accompanying this article, together with the great symptomatic relief afforded by the quinine in the presence of an unchanged evolution of the pathologic process in the lungs, justifies the belief that the effect of the drug is antitoxic; and this conclusion is further strengthened by the entire absence of cinchonism, notwithstanding the enormous quantity of quinine administered and absorbed. I have asked experimenters to test this; but they have not done so. I can speak only from careful clinical observation. There appears to be a mutual neutralization of quinine and pneumonia poisons. This in a measure tends to prevent cardiovascular (or sympathetic) paralysis, which is the most dangerous element of the morbid process. In cases seen early a very few injections suffice, in some cases only one. In cases seen on the third day, or later, more active treatment is needed; and, moreover, aid is needed to support cardiovascular (sympathetic) tone. This assistance is furnished by cocaine, by pituitary, by epinephrin, and in less degree by camphor, by atropine, by strychnine, and even, when the quinine is used, by digitalis.

This last is a point to which I shall refer at length in a later paper. At present I shall content myself with the remark that the phenomenon seems to bear out the view that digitalis principles, like quinine, are chemically neutralized by the pneumonia poison; thus explaining the value attributed by certain observers to enormous doses of this drug in acute lobar pneumonia, and the common experience of its uselessness in ordinary dosage.

I have not used strophanthin, but, from my recent experience with the latter in cases of auricular fibrillation, I should be inclined to give it a trial when the routine method fails—provided, however, that other symptoms do not contraindicate vagus stimulation.

As a rule, however, the systematic use of cocaine or pituitary liquid, or both in alternation, renders it unnecessary to resort to other methods for this particular purpose; the chances being that in cases which fail to respond to these agents the severity of the intoxication or the extent of the morbid anatomical

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changes in the lungs is too great to be overcome.[6] This may depend on the extreme virulence of the particular strain of pneumococcus or other microbe by which the infection is excited; on the association of several forms of microbes; or on a deficiency of resistance or recuperative power on the part of the patient, whether in the tissues, the blood-serum, or the body-juices.

If we knew definitely the nature of this deficiency in a given case, we might be able to compensate for it by the use of an appropriate serum, containing complement or immunizing bodies, or phagocytic enzymes, or whatever it might be that was lacking; but we have not yet arrived at that point of knowledge or the required degree of resourcefulness. Some of the serums that have been proposed might be useful. I cannot say, as I have had no experience in that direction. I have tried, however, to stimulate the powers of defense and restoration by the use of appropriate bacterial preparations and products. I can say positively that I have seen no harm from these. I believe that I have observed distinct and even amazing benefit; but I want to reserve the full discussion of this phase of the subject until I have completed some studies that are still under way. I prefer to use the bacterins after, rather than before, the fifth day; but cannot be dogmatic on this or any other feature of their use.

Concerning the great superiority of treatment by quinine and pressure-raising medicaments over all other routine or expectant methods yet proposed, I have not the slightest doubt. It has in my own hands cut the mortality of the severest cases in half. But this is not its only merit. The comfort, especially the relative ease of respiration of the patients, even of those who do not recover, is wonderful to see. The entire clinical picture is changed.

From charts alone, of course, this is scarcely evident. Little information can be drawn from these as to those signs and symptoms—the physiognomy, color, attitude, mental condition, and general appearance of the patient; the character and progress of the physical signs; the character and frequency of the cough; the character of sputum; the characteristics of the respiration and cardiac action other than frequency, etc.—on which the experienced physician bases his estimate of the gravity or progress of an individual case. The critic will have to accept the judgment of the observer that the conditions were such as to excite apprehension as to ultimate result, and that the medicaments were administered only when the state of the individual patient at the special time seemed to call for active therapeutic intervention. Necessarily but few charts can be reproduced for publication; but it may readily be seen that in some of the cases very few injections were given, and in some very many.

One point, however, to which especial attention may be directed, and which the charts all exhibit very well, is the effect on the blood-pressure, and even more than this the effect on the Gibson pulse-pressure ratio, of the cocaine or caffeine, and of the pituitary preparation. It is most marked in the case of the latter agent. In private practice the latter is ordinarily to be preferred. In hospitals mistaken ideas of economy sometimes lead trustees of institutions other-

[6] This is illustrated by chart published in International Medical Clinics, vol. iii, Series 22, p. 63.

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wise liberally managed to restrict the provision of expensive drugs (although they provide costly surgical appliances and surgical dressings without stint). This may prevent its use as freely as seems to be desirable.

Until recently I had reserved the treatment for cases in which active intervention was needed, permitting other patients to recover without it. And my statistics are based, therefore, on cases of at least moderate severity, and from those to the worst possible types. I now give the initial dose of quinine to every patient. In consequence, we have seen the mild cases become so much milder that they give no anxiety whatever, and require little further treatment beyond good nursing.

When bacterial therapy and serum therapy are sufficiently developed to be applied with precision in supplement to quinine, I confidently expect the mortality of pneumonia to become so small under the combined method that I hesitate to suggest a probable figure, lest I be deemed extravagant in my optimism.

In conclusion, a word as to the duration of treatment and the number of injections. The quinine injections are rarely continued beyond seventy-two hours, and the number of injections in this period (each, in most instances, containing 1 Gm.) ranges from 1 to 15. In one exceptional case of double lobar pneumonia, 22 injections were given, with good result. The number of cocaine or pituitary injections throughout the course of treatment ranges from 1 to 20. In an ordinary case—if there be such a thing—the number of quinine injections will be about 5 or 6, and the number of cocaine and pituitary injections 3 or 4 each. But in this, as in all other features of the treatment, there must be individualization. The routine is a guide, not a fetich. And the dose of any and every agent is that which I have elsewhere laid down as a general principle—*enough* (to produce the effect desired) *and no more.*

DISCUSSION OF PAPERS BY DRS. KOLIPINSKI* AND SOLIS-COHEN.

Dr. Riley said that he had had no personal experience with the treatment suggested by Dr. Kolipinski, but that upon general grounds he questioned whether it would not prove dangerous in the case of old people, and particularly in those suffering with renal disease. The use of bichloride of mercury in the presence of deranged kidneys was a questionable therapeutic procedure, and it was well known that weakness of these organs was a common concomitant of pneumonia. So far as was known, the method had only been employed to a limited extent, and he believed that further investigation would be necessary before arriving at a conclusion as to its value. He agreed with Dr. Solis-Cohen that while pneumonia was a common cause of death, in most cases coming to autopsy lesions indicative of the disease were found, whether the individual had died primarily of pneumonia or not. Hence statistics were not as reliable as might be desired. The figures given strongly indicated that the prevalence and mortality of pneumonia had increased during recent years; but it was well known that the disease was more prevalent in some years and periods than in others, and, on the whole, he was inclined to doubt whether there had been any notable increase in the number of cases. As to the treatment, quinine had been found a dangerous drug for hypodermic use. It had given rise to tetanus in a considerable number of cases. This was observed particularly in the Indian Army Service. There, the injections were given most carefully

* See the MONTHLY CYCLOPEDIA for July, 1913.

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under antiseptic precautions by skilled men, and yet after seventy-two hours or more tetanus was noted in not a few instances. In explanation it had been suggested that the tetanus spores, otherwise innocuous, existant in the patient, particularly in the intestines, were aroused to activity by the injection and, entering the blood, gave rise to the symptoms of the disease. In any case, the procedure had been found to be attended with danger, and it was well to bear this in mind in deciding upon the injection treatment. Every physician had his own treatment for pneumonia. He deprecated the let-alone treatment so long in vogue. Under it there had been no real progress in mastering the disease. Several years ago he had reported a number of cases in which a mortality of less than 8 per cent. had been obtained by the use of large doses of digitalis. At first he had been skeptical, but the results had been good, and now he was as enthusiastic over the method as Dr. Solis-Cohen was over his. Of late he had employed acetylsalicylic acid in combination with the digitalis. The treatment was particularly useful in the case of old people and when the kidneys were deranged. He had noted but little salicylism.

Dr. Oliver T. Osborne, New Haven, said that while it was undoubtedly true that in many cases death had been ascribed to pneumonia when it was really due primarily to other causes, there could be no doubt as to the great prevalence and high mortality of the disease. Dr. Solis-Cohen had obtained most excellent results from the fresh-air treatment of pneumonia as well as from the medicinal treatment, and it was difficult to say how far each of these agencies acted in the production of the good results. They had been so favorable, however, that he was inclined to give much credit to both. He himself did not know the best treatment for pneumonia, *i.e.*, the best treatment for all cases. In his opinion the agents and methods employed depended upon the conditions present, and the treatment should always be adapted to meet the needs of the individual patient. Whether or not digitalis should be employed depended upon the condition of the heart and the type of the disease. He was opposed to employing it in every case as a routine practice, and particularly in the presence of myocarditis. Digitalis caused sturdy contractions of the heart and its injudicious use had caused death in more than one case of pneumonia. When properly given, however, it acted perfectly. It was hard to understand the absence of cinchonism after repeated large doses of quinine as in the treatment described by Dr. Solis-Cohen, and he could offer no explanation. In his experience the use of the blood-pressure apparatus in these cases in private practice had been attended with the marked disadvantage of disturbing the patient and making him nervous, and it was often doubtful whether the information obtained by its use made up for the disadvantages. About all that it was necessary to know could be learned by the rate of the pulse. He commended the use of pituitary substance as suggested by the essayist.

Dr. Albert E. Roussel, Philadelphia, agreed with previous speakers that primary pneumonia should not be classified with secondary pneumonia. Secondary cases due to renal, cardiac, or other disease were bound to do badly and they did not afford a fair test for any method of treatment. For years he had been emphasizing the importance of watching the blood-pressure rather than the temperature in pneumonia. A pulse of 130 to 140 meant a failing heart and low blood-pressure, and the chief indication was to keep the pressure high. The reverse meant disaster. He had considerable faith in digitalis in these cases, having become convinced of its usefulness from studies both in this country and abroad. If digitalis failed, pituitary extract or some of the other drugs that had been mentioned were indicated. Quite recently he had used the treatment described by Dr. Solis-Cohen in 5 cases of pneumonia and the results had been good. The open-air treatment was undoubtedly an important factor. The treatment today consisted not in one drug or measure, but in many, the choice depending upon the conditions present in each individual case.

Dr. George Herbert Evans, San Francisco, said that there was at the present time no accepted satisfactory treatment for pneumonia. In the vast majority of cases the

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disease went steadily on to one termination or the other, wholly uninfluenced by any method of treatment that might be employed. At present there was but one definite indication in the treatment, the administration of digitalis in embarrassed right heart. The judicious use of large doses often gave relief and made success out of failure. Some time ago he had taken up Dr. Solis-Cohen's treatment with urea and quinine hydrochloride. The result in the first case had been so satisfactory that he had subsequently employed it in other cases, but without the same success. During the last year he had employed pituitary extract alone. His experience with this drug led him to believe that it constituted the most important part of Dr. Solis-Cohen's treatment.

Dr. Francis M. Pottenger, Los Angeles, inquired as to the length of the time required for complete resolution in the average case of pneumonia. We were inclined to think that the process went on rapidly and was completed in a short time, but his experience in the examination of tuberculous subjects who had previously had a pneumonia had led him to believe that the time required for resolution was much longer than was commonly supposed. He also asked what was meant by a large dose of digitalis. He had found 25 drops of the tincture necessary in some cases to produce physiologic effect. The short duration of the attack was a noticeable feature in the charts shown by Dr. Solis-Cohen. If the disease was due to bacterial invasion, and we could use the proper vaccine, there should be a shortening in the duration of the disease and in the time required for resolution. As regards results, one man obtained one result and another man another with any method of treatment. Success was chiefly due to the observance of minutiæ. It was the same with pulmonary tuberculosis. One man got no result and another obtained a good result from the same treatment. The treatment was the treatment of the patient as well as the disease. Individualization and the observance of minutiæ were the chief points making for success.

Dr. Kolipinski said that in the formula presented by him the corrosive sublimate did not seem to act as a poison. He had given as much as ½ grain of it in twenty-four hours without injurious result. As stated in the paper, a good clinical prognostic indication in the pneumonias was the cough. Little or no cough and scanty expectoration signified a severe case; much cough and profuse expectoration indicated certain recovery. Of course, the kind of case and the complications should also be taken into consideration.

Dr. Morris inquired whether, if the mortality from pneumonia was increasing from year to year, a relationship could not be traced between this and the lessened resistance of the body tissues caused by the invasion of the influenza bacillus. He also asked whether there was any particular significance in the painting of the skin with iodine before giving the injections of quinine and urea, suggesting that this might have some influence upon the chemotactic effect of the injection. He believed that every physician had his own private method of treating pneumonia, but that the particular agents and measures employed did not much matter, so long as they were given with confidence.

Dr. Solis-Cohen, in closing, said that the element of confidence was undoubtedly of the highest importance. As to tetanus, his experience with the injection of quinine in this form had begun 30 years ago, in Dr. Bartholow's clinic, in the treatment of chronic malaria. In all that time he had not seen a case of tetanus and had made over 5000, possibly 10,000, injections. There might be something peculiar in the climate or other special conditions of Indian practice. He had met with just four instances of sloughing, and three of them had occurred before the present technique was instituted, in 1886. Since then he had seen but one case, and that followed an injection given by a nurse. He had always insisted in hospital cases that the injections be given by the internes, but through some oversight it had been given in this instance by a nurse. In his opinion sloughing was due to a corrosive action upon the skin and subcutaneous tissues and, besides painting with iodine, one might, as an additional precaution, cover the skin with a piece of rubber protective and make the injection through that. Usually it was

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sufficient, however, to empty the syringe thoroughly before withdrawing the needle. The object, of course, was to prevent any drop of the preparation from falling upon the skin. The puncture should be sealed with collodion or iodoform-collodion. According to his observation the necrotic action only occurred upon skin that had been broken, not upon the unbroken skin. The object of the iodine was to prevent local infection in devitalized tissue in case the quinine and urea solution did act badly. Grip infection and the consequent lowering of resistance had undoubtedly played a part in the increased mortality and prevalence of pneumonia. So far as general mortality went, statistics were of value, though, of course, they had no bearing on prognosis in an individual case. There could be no doubt that the general mortality from pneumonia had increased in recent years; the data given in the paper were but a fragment of the available evidence. He believed that this was due in part to therapeutic nihilism and so-called expectant treatment. Many of the patients included in the mortality lists might have recovered under the care of some one with sufficient confidence in his art and his knowledge to institute active treatment. Dr. Pottenger's suggestion that pneumonia not infrequently left more or less lasting consolidation was correct. He believed that intelligent use of the bacterial products would prove of value in preventing this. Under the treatment outlined in the paper defervescence usually occurred by lysis, rather than crisis. He still observed crisis in mild cases of pneumonia in which the course of the disease was not interfered with. The change from crisis to lysis, and the great relief afforded by the quinine without corresponding change in the local morbid process, indicated that the treatment was antitoxic in character. This view was strengthened by the absence of cinchonism. It would appear that the pneumonia poison and the quinine counteracted or neutralized each other. This tended to prevent cardiovascular failure, one of the most dangerous possibilities of the toxemia. Pituitary preparations, camphor, and cocaine also helped to avert this danger. Each case, however, should be treated upon its own merits. The general routine was a guide; but beyond this, careful individualization was also necessary for success.

THE X-RAY IN DERMATOLOGY.

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THERE has been so vast an accumulation of literature on the use of the X-ray in diseases of the skin, and so little of a definite nature is to be found in the systematic treatises of the skin, that an ample apology is afforded for a résumé of this form of treatment, especially since it concerns a class of disorders that every practitioner is called upon to treat. Instead of falling into disrepute, as was presaged for the Röntgen rays for every purpose save in their tried and invaluable function in diagnostic medicine and surgery, these rays have really added a very potent factor to the therapeutic armamentarium of the medical profession.

We are now able to place the X-rays on a definite basis as to therapeutic efficiency; for the experimental age is largely past, and the indications and limitations are sufficiently well understood to permit of the application of the rays in various fields in a scientifically accurate manner. Hardly a single class of disorders in the realm of medicine, surgery and the specialties has eluded their experimental application, and the field of endeavors of the radiologist has, at least in a therapeutic sense, become well defined and restricted. We

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today know quite well the indications for the rays; perfection of technique has been worked out, and we are now fairly safe in forecasting the course that a case under treatment by these rays will run.

Perhaps it is in the domain of skin diseases that we are on safest grounds in our knowledge of the usefulness of the Röntgen rays, and in this field there is a rather general concurrence of opinion as to the particular indications for their employment. In some of the older textbooks on dermatology—"old" in spite of their appearance after the discovery of the X-rays, some sixteen years ago—there was hardly a class of skin diseases relative to which the X-rays were not mentioned as a therapeutic resource. Through the sifting process of time and experience we have been enabled to eliminate all but a very few of the dermatological diseases as conditions in which the rays can be employed with advantage; in these few, however, the rays may be regarded almost as a specific remedial measure.

How the rays act we can well observe through the results achieved, but it is still a debatable point how the physiological changes produced occur. This may sound paradoxical, but the accumulated mass of literature yields but little that is definite, and is a maze of theoretic contradictions on the subject referred to. It forces one to the stand of the empiricist, inasmuch as we know when and how the X-rays do good in certain diseases of the skin and its appendages, while the why and wherefore is still *sub judice*.

Mild applications produce little or no reaction. Stronger and longer applications produce the familiar dermatitis, freely discussed in the textbooks and even by the laity, who invariably ask as to the danger of a burn, even in the taking of a radiograph; and finally, the deep-seated and necrotic burn, fortunately at this day practically never seen. The early days of the Röntgen ray yielded many a martyr as a sacrifice to its further progress.

But in treating the ordinary cutaneous diseases it is not even pardonable to produce a burn, unless this be an occasional mishap in the treatment of epithelioma. The technique employed and results achieved probably furnish us the best clue to the physiological nature of topical applications of the X-ray. We know, for instance, that in applying the rays in acute inflammatory diseases of the skin the mildest possible exposures are necessary if favorable results are to be secured, whereas in old chronic conditions accompanied with thickened indurations or scaling it is necessary to give longer and stronger exposures, even occasionally to the extent of a mild reaction, before benefit is derived. In other words it is the same principle that applies to many medicaments given internally, viz., that while small doses of a given drug may be soothing and sedative in character, larger ones will produce a stimulating effect; *e.g.*, ipecac and apomorphine.

The histological tissue changes resulting from an ordinary X-ray exposure are not very pronounced. Some slight increase in the normal number of leucocytes may be observed, with a moderate degree of hyperemia. Upon the epithelial skin layer, the reaction is more noticeable. Here the rays seem to have a predilection for the pathological elements, which they tend to destroy, and for stimulation of the normal cells to increased vigor; this effect is in direct ratio,

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as above mentioned, to the intensity of the current, the duration of the exposure, and the distance of the tube from the part treated. If the treatment be sufficiently urged, the reaction may go on to the actual destruction of normal tissue elements. Though the X-ray was at first thought to be parasiticidal in its action, this view has been practically abandoned, as in ringworm and one or two other parasitic skin diseases, in which it serves admirably, the beneficial results are due to its depilatory power.

The technique of applying the rays is too extended a subject to warrant its being taken up in an article as general in scope as this one. Every disease, even every patient, is a law unto itself and himself when treatment by the X-rays is instituted; even the question of personal idiosyncrasy, although disputed by some authorities, enters into it. In general, we may state that as little or no penetration is desired, and, in fact, penetration to any marked distance is really to be avoided, a tube of low vacuum should be employed and only a small amount of current—¼ to 1 milliampère—permitted to pass through the tube. The surrounding, unaffected parts should usually be covered with lead foil, although this is not always necessary or even desirable, as in certain cutaneous diseases where there is a tendency to spreading it is advisable to "spray" some of the rays on the contiguous areas as a prophylactic against further inroads of the eruption. Even the hairy parts may at times be left uncovered for a single treatment or two with impunity, as the dosage ordinarily used in treating diseases of the skin will but rarely cause any depilatory action, and the tendency of the X-rays to cause falling out of the hair is no longer viewed with the same alarm as obtained a number of years ago. After a period of several months the hair grows in again, and according to my experience the second and recurring crop of hair is stronger and more luxuriant than the first.

I never use the filter, whether the leather, aluminum or the numerous others that are used to exclude the less penetrating rays,—at least never in the class of diseases that forms the subject-matter of this paper. It is precisely these rays, the softer ones that are arrested by the filters, that we wish to utilize in the treatment of skin disorders, as a tube of higher penetration would act also on the underlying tissues, and this is both unnecessary and frequently definitely to be avoided. Only the rays that are denominated "soft," and which bathe the superficial portions of the body, are to be employed in the routine treatment of skin diseases.

Again, the questions of duration and frequency of treatment, and of distance from the tube, are governed by the character and extent of the disease and the individual experience and attitude of the operator. In general, it has been my observation that best results are secured by pushing treatments at the beginning. Thus, as a rule, one may begin with a brief application of a small amount of current, repeat this frequently,—every other day, and even in some cases every day,—and then gradually lengthen the period of exposure, probably with a greater intensity of current, but longer intervals, *e.g.*, every third day, twice a week, and thence up to once a week, at which interval, in the more chronic and obstinate lesions, it may be necessary to hold the patient under treatment for some little time.

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As to recurrences,—and these are by no means uncommon, under the X-ray as under any other form of treatment,—the observation of practically all radiologists is that in almost all the cases the disease returns in by no means as severe a form as before the institution of X-ray treatment, and that the recurrence is much more amenable to treatment and of considerably shorter duration.

What are the indications for the use of the X-rays in skin diseases? They are not by any means numerous, and the number of diseases in which the action of the ray is of curative efficiency may be placed at not over a half-dozen, with probably an equal number of cutaneous disorders in which the possibility of improvement with occasional cure can be kept in mind.

In the category of skin diseases that may be classed as of inflammatory nature, *eczema* is one of the most rebellious to treatment, particularly if of the *chronic* or the recurrent variety. Here the X-rays fill a decided niche, many cases yielding to a few applications after utter failure of the usual systemic and local medication by the innumerable ointments recommended for this condition. Decided relief from the itching is one of the most pronounced benefits derived, the intolerable pruritus accompanying the disease being frequently overcome after only one or two applications. The scaliness in the more chronic and so-called *"squamous"* form of eczema also shows a speedy tendency to disappearance, and the seborrhea requires but a minimum exposure for its complete eradication. It is remarkable how amenable harassing *pruritus,* even aside from its association with the various skin lesions, is to röntgenization of the affected area. The relief procured is most probably due to the well-known property of the X-rays of acting as a sedative on terminal nerve filaments. I have evolved a special technique in the Röntgen-ray treatment of eczema, which has yielded most excellent results, especially in the more acute and highly inflammatory forms of the disease.

At this point I would not have it understood that constitutional treatment is to be given up or even displaced when X-ray treatment is instituted. On the contrary, if the disease is due to a diathetic condition of the patient, systemic medication is probably of more importance than any local measure. This factor in the treatment should be left to the attending physician, who will be better able than the Röntgen specialist to take care of the metabolic changes that constitute one of the most prolific causes of cutaneous disorders, the skin lesion being but an accompaniment of a systemic disease. The action of the rays is but topical, and best results are achieved when there is co-operation between the attending physician and the radiologist. For instance, it is absolutely useless to attempt to treat occupational eczema, which Knowles claims forms 25 per cent. of all cases of this disease, without having the cause of irritation removed. This is, after all, but coming back to the cardinal principle of all treatment, viz., remove the cause, then treat the results or manifestations of that cause.

Psoriasis is fairly amenable to the influence of the X-rays, and patches can be quickly caused to disappear after a few exposures. But recurrences are common and cannot be avoided, and in a condition of this nature, unless the lesions are fairly well localized, I do not advise its use, as in the diffuse form of the

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disease it is next to impossible to apply enough of the rays to justify the employment of the procedure. In the more exposed parts, as the hands or wrists, it is possible to keep the patient fairly well cleared of the eruption; but this requires persistent treatment, and there is no guarantee against a speedy return of the disease. I have even seen the disease, after apparently entire disappearance of the patches, recur in even a more virulent form than before the institution of treatment within a few days after cessation of X-ray applications. Nonetheless, the results in the majority of cases are sufficiently good to warrant a trial if failure—and this is usual—has attended other methods.

At this point, if I may digress, I would plead for a slightly earlier trial of the X-ray not only in the skin diseases in which it may be indicated, but in many other medical and surgical conditions in which its value has been proven. I think I am but quoting the experience of every radiologist when I point to the late stage at which we are called upon to treat the majority of our cases. After the resources of the attending physician in a therapeutic sense are largely exhausted and progress has been largely of a negative nature, the X-ray man is called upon to be the "savior," and too often the tendency to oblige an attending physician whose skill, patience, and time have been taxed by an obstinate case may lead to a trial of the rays in conditions in which their use is both unjustifiable and not improbably contraindicated. It is under just such circumstances that a useful therapeutic adjunct may be given a "black eye," and be considered—undeservedly, as electrotherapeutics is frequently regarded—the ash heap upon which are loaded the ailments that have resisted every other form of remedial agent. If the Röntgen ray were used earlier in the conditions in which it is indicated, there would be less opportunity to apologize for its failure to cause occasionally a cure in cases where it is used as a last resort.

In *lupus*, both *erythematosus* and *vulgaris*, the X-ray is the method of choice. There is usually a very ready response to the influence of the rays, and although in the tuberculous form of the disease ultimate cure is a rather remote possibility, arrest of the onward progress of the ulceration is usually secured, and I have been fortunate in securing two fairly good cosmetic results, a thing unknown by any other form of treatment unless it be by the Finsen light, which, indeed, has been largely supplanted by the use of the X-rays.

In *ringworm* the results of X-ray treatment may be regarded as brilliant. No other single agent can reproduce the speedy termination of the disease secured by this method of treatment. I have had occasion to treat a number of these cases, occurring almost in epidemic form, for an institution in which at least one-third of the children were infected with the parasitic fungus of this disease—the trichophyton—in the scalp. The majority of the cases were cured after a small number of exposures to the rays, no case requiring over a dozen treatments. In one or two instances the disease had been of over a year's duration. A technique evolved by Sabouraud is usually adopted in the treatment of ringworm of the scalp. By his method accurate dosage of the amount of rays sufficient to produce depilation—the end-result desired—is possible; this dosage depending upon the change of color taking place in a small tablet of barium platinocyanide which is exposed to the action of the rays while the patient is

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undergoing treatment. Ringworm of the bearded region, the familiar barbers' itch, and *sycosis vulgaris* are both likewise amenable to the action of the X-rays; and although my experience is limited, many operators, especially abroad, where the disease is more prevalent than in this country, report equally favorable results in the treatment of *favus*. The physiological action of the rays in these parasitic diseases may be very briefly described. The focus of the disease is limited to the horny layer of the epidermis, in which are located the hair follicles; here it is that the micro-organisms are located; exposure to the X-ray kills this layer of epithelium, and the cells with the hair and contained germs fall out. Alopecia caused by the X-ray, as previously mentioned, is but temporary.

In *acne* this method of treatment is continually meeting with increased favor, and I know of no skin lesion where there is greater satisfaction to both patient and physician in the results secured than in a disfiguring and long-standing case of "pimples." The good results which I was able to report a year ago in this condition[1] I am still accomplishing, and the percentage of recurrences which I mentioned in that paper I find now to have been further considerably diminished. An occasional exposure, once a month or every six weeks, after the disappearance of the eruption will act almost universally as a prophylactic against the return of the disease. The X-rays may be used with practically uniformly good results in every variety of acne, including the papular, pustular, rosacea, and tubercular forms of the disease. It is always advisable to caution the patient, however, that perseverance is necessary, as a period of from three to eight or nine months is required to accomplish a cure.

The universal favor that Röntgen-ray treatment has met with in *epithelioma* is well deserved, and its value is generally conceded. The literature on this subject is voluminous, the consensus of opinion being that in skin cancer where there has been no metastasis and no adherence to the underlying tissue, the X-ray may be regarded as absolutely curative in practically every instance. The papillary and superficial varieties of the disease are most susceptible to the influence of the rays, and in these forms the method is to be preferred to surgical intervention, as recurrences are unusual by reason of the prophylactic spraying of the surrounding tissues with the rays and, furthermore, the cosmetic result is almost perfect, practically no scar remaining. We can afford to be rather optimistic in this class of cases, as some of the worst forms of ulcerative epithelioma I have met have yielded almost miraculously to X-ray treatment, and it would be no exaggeration to class the X-ray as the most important single factor in the treatment of this condition. The effect is noticeable after only a few exposures in the shrinking of the edges of the growth and the gradual lessening of the discharge. The X-rays in this condition seem to exhibit almost a selective action, there being, aside from an occasional erythematous reaction of the surrounding tissues, no change except gradual atrophy and disappearance of the cancer cells, for which the rays appear to have a special affinity.

I regret that from my own observation I am unable to confirm the excellent results secured by other operators in the cure of *keloid*. Whether

[1] N. Y. Med. Journal, July 13, 1912.

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this has been from faulty application of the rays or poor selection of cases I know not, but I have been singularly unsuccessful in treating this condition. The consensus of opinion among radiologists seems, however, to be that the X-rays are of decided advantage as a curative agent in keloid, and many cases successfully treated by this means have been reported.

I no longer employ or advise the use of the X-ray in *hypertrichosis*. As previously mentioned, the depilation is at best temporary, and the danger of a burn attends exposure sufficient to cause the falling out of the hair. The most severe burn I have ever seen, fortunately not in my own practice, was the result of an overzealous application of the rays for the removal of superfluous hairs.

The X-rays have been advocated for a number of other cutaneous diseases, but in these my experience has been either limited or of a negative nature; or again, other and more effective remedies are employed. Among these conditions are moles, nevi, warts (for these fulguration or other forms of electric desiccation are more trustworthy and far preferable), rhinoscleroma, lichen planus, and alopecia. In the latter condition Tousey claims that the X-ray acts as a mild stimulant to the hair follicles. This hardly coincides with the usually accepted view of the depilatory action of the rays, and I can with difficulty imagine how the rays can produce a beneficial effect in baldness of any kind.

In this paper I have attempted to discuss only those skin conditions in which my own observation and clinical experience have proven the virtue and advisability of röntgenization as a remedial agent. These are fairly limited in scope, but when indication presents, the rays are of undoubted value, their action in some instances being almost of a specific nature. The advent of radiology has furnished a valuable adjunct to therapeusis in dermatology.

COPPER CHEMOTHERAPY—WITH SPECIAL REFERENCE TO THE DOUBLE TARTRATE OF COPPER OXIDE AND SODIUM.*

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(*Concluded from the November issue.*)

Investigations have shown, therefore, that the inorganic salts of copper and the so-called colloidal solutions of this metal are endowed with a very considerable germicidal power. Inasmuch as there is no reference in the literature to any determination of the antiseptic power of the double salt (double tartrate of copper oxide and sodium), it was deemed advisable to undertake some experiments in this regard. Observations were made upon fermenta-

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tion of milk, urine (normal and diabetic), putrefaction of protein solutions, and cultures of *Staphylococcus pyogenes aureus*.

Added to fresh normal urine in the proportion of 1 c.c. of solution of the double salt (5.3 mg. CuO) to 50 c.c. of urine, the salt was found to delay alkaline fermentation, no ammoniacal odor developing in the urine for a week, while the controls developed a strong ammoniacal odor before that time. While this was the case with reference to fermentation, a curious fact was noted, viz., that in every case a profuse growth of mold appeared on the urine containing the copper solution, while none appeared on the controls. This was especially the case with diabetic urine, where the growth was extremely luxuriant in four or five days. In flasks containing urine, 50 c.c., to which 2 c.c. of copper solution (10.6 mg. of CuO) had been added, the phenomena with reference to putrefaction were the same, but the development of mold growth was partly inhibited.

Following are a few brief protocols of experiments carried out on urine:—

No. I.—Sept. 11. Fifty c.c. of fresh urine, acid, sp. gr. 1018, exposed in an open flask. 2 c.c. copper solution (10.6 mg. CuO) added. Same quantity of urine placed in second flask as control.

Sept. 12. Fungous growth around margin of surface; thick white sediment at bottom; odor slightly urinous. Control clear; odor slightly urinous; no mold.

Sept. 14. Mold appearing on surface. None on control.

Sept. 17. Aromatic, moldy odor; mold growing over surface in round colonies. Control has an ammoniacal odor.

No. II.—Sept. 12. Fifty c.c. of normal urine, plus 2 c.c. of copper solution, placed in an open flask.

Sept. 15. No ammoniacal odor; dark mold around margin of surface. Control strongly ammoniacal.

Sept. 19. No ammoniacal odor. Control very strongly ammoniacal.

No. III.—Sept. 12. Fifty c.c. of diabetic urine, plus 1 c.c. copper solution exposed in an open beaker.

Sept. 15. Mold on surface; heavy precipitate. Control negative.

Sept. 17. Brown color; thick, puffy layer of mold over surface. Control reddish brown, free of mold, and with a strong odor.

Added to fresh milk in a sterilized flask, in the proportion of 1 c.c. of solution of the double salt (5.3 mg. CuO) to 50 c.c. of milk, copper was found to inhibit lactic acid fermentation and coagulation for days, while the controls were firmly coagulated and of sour odor. Two experiments may be cited:—

No. I.—Sept. 11. Fifty c.c. of fresh milk placed in a stoppered sterilized flask, plus 1 c.c. of copper solution.

Sept. 12. Slight curd; odor sweet. Control thickly curdled and of sour smell.

No. II.—Sept. 18. Fifty c.c. of fresh milk, plus 2 c.c. copper solution, placed in an open flask.

Sept. 20. Liquid and odorless. Control coagulated and of sour odor.

Sept. 21. Liquid and odorless. Control solidly coagulated and serum separated, with strong, sour odor.

When copper was added to ordinary bouillon, in the proportion of 1 c.c. of solution of the double salt (5.3 mg. of CuO) to 50 c.c. of the proteid solution, putrefaction was inhibited.

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BACTERIOLOGICAL TESTS.—These were made with pure cultures of *Staphylococcus pyogenes aureus*. Tubes of glucose-agar were inoculated by both stabs and slant smears. To test-tubes half-filled with culture medium 1 c.c. of the copper solution (5.3 mg. CuO) was added, and these were inoculated from pure cultures of *Staphylococcus pyogenes aureus*. Controls were simultaneously made, that is, tubes were inoculated minus the copper solution. After forty-eight hours' incubation no growth was visible in the tubes treated with the copper solution, while in the controls abundant cultures of the yellow staphylococcus were obtained, especially on the slants. Later, however, the curious phenomenon of stimulation of growth was observed, for in the tubes to which copper solution had been added, although no growth of staphylococcus was visible, a luxuriant white growth appeared. Examination of this organism showed it to be very motile, and it was soon identified as a contamination from tap water which had been used in mixing drops from the cultures of staphylococcus in the experiments. Another series of experiments was undertaken minus the tap water. To test-tubes half-filled (50 Gm.) with culture medium (glucose-agar) 1 c.c. of the copper solution (5.3 mg. CuO) was added, and these, after slanting, were inoculated from pure cultures of *Staphylococcus pyogenes aureus*. Controls were simultaneously made. After forty-eight hours' incubation no growth was visible in the tubes treated with copper solution, while the controls showed abundant growth of the yellow staphylococcus. With this technique no growth whatever appeared upon the media to which copper solution had been added. The strength of copper oxide present in the tubes containing 1 c.c. of the copper solution was estimated at 1 to 50,000.

Further experiments were made, using progressively weaker dilutions. 0.5 c.c. of copper solution (2.65 mg. CuO), added to tubes half-filled (50 Gm.) with glucose-agar media, prevented all growth. This corresponded to a strength of 1 to 200,000. 0.25 c.c. of copper solution likewise prevented all growth of staphylococcus, corresponding to a strength of CuO of 1 in 500,000.

EXPERIMENTAL THERAPEUTICS.—This portion of our experimental work is as yet incomplete, but enough has been obtained in the way of results to encourage the pursuit of further work in this direction. Tests were made first upon experimental pneumococcic peritonitis in rabbits. Following is the protocol of an experiment:—

EXP.—Two rabbits were taken, each weighing 1.5 kilograms. Sputum from 15 persons was collected in a sterilized dish and thoroughly mixed. 1.5 c.c. of this mixed sputum was injected into the peritoneal cavity of rabbit No. 1 at 2 P.M. An equal quantity (1.5 c.c.) of sputum with which 1 c.c. of the solution of copper salt (5.3 mg. CuO) had been thoroughly mixed was immediately injected into the peritoneal cavity of rabbit No. 2.

Rabbit No. 1 became immediately depressed, with extremely rapid respirations, dilated pupils, and some ataxia. At 8 P.M. the same day the respirations had become slower. The animal was disinclined to move, and its head was tremulous. At 7 A.M. the next morning rabbit No. 1 seemed drowsy, and at 11 A.M. died. Rabbit No. 2 immediately after the injection was not much depressed, but the respirations increased in frequency, not, however, to anything like the same extent as in control No. 1. At 8 P.M. the same day the animal appeared normal, and the next day at 11 A.M. (at which

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time rabbit No. 1 died) the animal which had received the sputum mixed with the copper solution was normal.

Autopsy on rabbit No. 1 showed the abdomen distended. The peritoneum was injected; the colon was swollen, dark, petechial, deeply injected, and covered with lymph. The lymph exudation was quite extensive, involving the parietal peritoneum, which was inflamed. The liver was dark and hemorrhagic. The kidneys were injected and ecchymotic. A considerable quantity of dark-brown fluid was found in the peritoneal cavity. Cultures were made from both the fluid and exudate on bouillon and agar. These developed pure cultures of pneumococcus. Smears from both the fluid and exudate stained with carbol-fuchsin showed that the only organism present was the pneumococcus.

To determine whether the injection of a calculated therapeutic dose of the solution would have any deleterious effects upon the healthy animal the following experiment was performed:—

EXP.—A rabbit weighing 1 kilogram was taken. 0.25 c.c. of the copper solution, representing 1.3 mg. of CuO, plus 0.75 c.c. of normal salt solution, was injected into the marginal vein of the ear. There was no reaction and no symptoms were manifest. The next day the animal's blood was examined. The erythrocytes were normal. There was no crenation, vacuolation, or granular degeneration, nor any sign of hemolysis. The same experiment was repeated in another rabbit, using 0.5 c.c. of the solution, representing 2.6 mg. of CuO, plus 1 c.c. of salt solution. The results were entirely negative.

An attempt was then made to determine the effect of the copper solution upon an experimental staphylococcemia in a rabbit:—

EXP.—A young rabbit weighing 750 grams was used.

Nov. 12. 0.5 c.c. of an emulsion made from a pure culture of *Staphylococcus pyogenes aureus* was injected into the marginal vein of the ear.

Nov. 14. The animal shows loss of appetite and lessened activity. Could not stand well. Temperature 103° F. Probably developing joint infection.

Nov. 15. Total anorexia. Respiration very rapid. Animal very sick, and seemingly moribund. Temperature 105° F. In the afternoon 0.5 c.c. of copper solution, representing 5.3 mg. CuO, plus salt solution, was injected into the marginal vein of the ear.

Nov. 16. Slight appetite. Respiration not so rapid. Animal more active and resists when handled. Temperature 102.5° F.

Nov. 17. Animal much improved. Recovery ensued.

The virulence of the infection in the above case seems to be shown by the onset of symptoms indicating a septicemia.

We have also tested the solution of double tartrate of copper oxide and sodium from a therapeutic standpoint in the out-patient department of the hospital in a variety of pyogenic infections. The details of these investigations may be subsequently reported.

The results obtained in the external use of the drug, while they have been by no means disappointing, have not been brilliant. It is a well-known fact that pyogenic infections involving the skin are resistant to antiseptic treatment of any kind because of the simple fact that the organisms are protected in such a way that the necessary propinquity between germ and destroyer cannot be secured.

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III. Summary of Conclusions.

The above investigations are, it is true, incomplete; but they appear susceptible of the following conclusions:—

I. The only compound of copper at present available for intravenous injection is a double salt such as the double tartrate of copper oxide and sodium. This compound does not precipitate proteid, and though the affinity of copper for hemoglobin in concentrated solution is such that it combines with the red corpuscles in the test-tube, this does not seem to occur to an appreciable extent when the copper salt is diluted with salt solution and injected into the veins.

II. The minimum fatal dose of the double salt in terms of CuO is as follows: For frogs (30 Gm.), 0.0005 Gm. For rabbits (1 kilogram), 0.0159 Gm. For dogs (3 kilograms), 0.15 Gm.

III. The chief pharmacodynamic effects of poisonous doses of copper administered as double salt are primary stimulation and subsequent paralysis of the peripheral terminations of motor nerves, involuntary muscles, and heart muscle.

IV. The solution of the double salt is powerfully antiseptic. It delays alkaline fermentation and putrefaction of urine, inhibits lactic acid fermentation and coagulation of milk, and putrefaction of proteids. It prevents the growth of *Staphylococcus pyogenes aureus* in the strength of 1 to 500,000.

V. A quantity of the solution corresponding to 0.0053 Gm. of CuO prevents the development of an otherwise fatal pneumococcic peritonitis in rabbits. A like quantity will arrest staphylococcemia in the rabbit.

VI. One-half c.c. of the solution of the double salt, representing 0.0026 Gm. of CuO, can be injected intravenously in a rabbit of 2 pounds' weight without the slightest subjective or objective symptoms. Therefore, in an adult human being weighing 140 pounds it should be feasible to inject 30 c.c. of the solution, representing 0.16 Gm. of CuO, without producing symptoms. This is only a theoretical margin of safety, however, and if its practical application to human medicine were ever attempted it would be proper to use a smaller dose. (One intravenous injection has been made by us in man up to the present time, in a case seen in the service of Professor Vaughan; 10 c.c. of the solution, representing 0.053 Gm. of CuO, well diluted with salt solution, were injected into the elbow vein. The injection was without any deleterious effect upon the blood.)

VII. The chief objection to the method in its application to practical work resides in the following facts: The double tartrate of copper oxide and sodium is not a perfectly stable compound, exists only in solution, and cannot be isolated as a salt. Being unstable and of uncertain chemical composition, the solution must be freshly prepared and specially titrated before use. This is a great practical disadvantage, and may probably prevent application of the method at present, to any extent at least, in human medicine.

It follows, we believe, without further amplification, that the method here presented is not claimed to be perfectly adapted to human application. Our

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chief desire has been (1) to emphasize the possibilities which inherently reside in copper chemotherapy; (2) to show that the theoretical considerations are to a great extent justified by the behavior of the copper ion, as present in the solution of a double salt, in our experimental investigation.

We must leave to the future the perfection of a method. If copper behaved chemically as does arsenic, for example, such a consummation could be rapidly evolved. Unfortunately, it does not so behave. Nor are we much better off in respect to the use of an albuminate of the metal, since up to the present time it has been found impossible to make a fixed proteid compound of copper containing more than 6 per cent. of the metal. However, we shall not abandon hope, since the facts, supported by both theoretical and practical considerations, all point to the copper ion as one from which more is to be expected in internal medicine in the future than has been secured from it in the past.

Author's Abstract

THE ABSURDITIES AND THE COMMERCIALISM OF THE PROPOSED NINTH DECENNIAL REVISION OF THE UNITED STATES PHARMACOPOEIA.*

By OLIVER T. OSBORNE, M.D.,
Professor of Therapeutics in Yale University,
NEW HAVEN, CONN.

Objection was raised by the author to the officialization of such articles as lemon-peel and orange-peel. Drugs the activities of which were mythical and historical, such as marigold, saffron, condurango, etc., should not appear in the Pharmacopœia. One hundred and fifty-eight drugs had been deleted by the subcommittee on scope of the new Pharmacopœia, but 79, or just one-half, of these deletions had been voted in by the executive committee in spite of the adverse recommendation. The executive committee had also exercised its prerogative by approving a number of drugs and preparations that had not even come before the subcommittee. Among such drugs were fluidextract of phytolacca, tincture of quillaja, oleoresin of parsley seed, purified animal charcoal, etc. It should be remembered, in urging deletions, that any physician can obtain a drug or preparation omitted from the new Pharmacopœia by the standard placed in an older Pharmacopœia. One hundred and seventeen thousand prescriptions had been collected from different parts of the United States as a basis for estimating, by the number of times a drug had been ordered, whether it had therapeutic value or not. The result of this would be, on the contrary,

* Abstract of paper read at the Fourteenth Annual Meeting of the American Therapeutic Society, held in Washington, D. C., May 5 and 6, 1913.

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that the Pharmacopœia would be founded more or less on commercialism, and not on therapeutic values. Officialization of a worthless drug allowed the pharmaceutical houses to make useless preparations of it and compelled the druggist to carry these on his shelves. Standardization, used as an argument in favor of the admission of all kinds of drugs and preparations by those desiring a large Pharmacopœia, was not a valid one, as such articles as lemon-peel and saffron could not be standardized. Admission of the following articles to the next Pharmacopœia was considered by the essayist unnecessary and unscientific, many of them being unstandardizable and the rest required to come up to a certain standard by the pure-food laws: Adeps, althæa, amygdala dulcis, amylum, aqua, aurantii amari cortex, aurantii dulcis cortex, cantharides, cera alba, cera flava, cetaceum, charta sinapis, coccus, coriandrum, emplastrum adhesivum, extractum malti, fœniculum, gelatinum, gossypium purificatum, humulus, limonis cortex, limonis succus, linum, lycopodium, maltum, manna, mel, mel depuratum, mel rosæ, mentha piperita, mentha viridis, oleum gossypii seminis, oleum lini, oleum olivæ, paraffinum, pepo, pix liquida, pyroxylinum, resina, rosa gallica, saccharum, saccharum lactis, sapo, sassafras, sassafras medulla, sevum præparatum, sodii chloridum, terebinthina, terebinthina Canadensis, ulmus, vanilla. Many of the crude spices recognized in the Pharmacopœia were not needed, their oils being official. A considerable number of metals and chemicals of no drug value had been approved for the new Pharmacopœia. None of the following drugs or their preparations being needed to treat a condition that might not be better treated by other more active remedies, their officialization was unnecessary: Anthemis, arnica, berberis, calendula, calumba, chondrus, cimicifuga, condurango, convallaria, crocus, eriodictyon, frangula, gambir, gossypii cortex, grindelia, guaiacum, hæmatoxylon, kino, krameria, lactucarium, leptandra, lupulinum, matricaria, mezereum, moschus, oleoresina petroselini, oleum hedeomæ, pareira, phytolacca, pyrethrum, quassia, quillaja, rhus glabra, sabal, sanguinaria, sarsaparilla, senega, serpentaria, staphisagria, stillingia, sumbul, taraxacum, triticum, uva ursi, xanthoxylum, zea. Mixtures containing useless or very numerous ingredients should not be officialized, viz., elixir adjuvans, 11 ingredients; elixir ferri, quininæ et strychninæ phosphatum, 15; extractum colocynthidis compositum, 5; infusum sennæ compositum (black draught), 5; liquor ferri et ammonii acetatis (Basham's mixture), 12; mistura glycyrrhizæ composita (brown mixture), 19; mistura rhei et sodæ, 5; pilulæ catharticæ compositæ, 8; syrupus hypophosphitum compositus, 10; syrupus sarsaparillæ compositus, 7; syrupus scillæ compositus, 5; tinctura benzoini composita, 5. On the other hand, a useful drug should, if possible, receive a standard in the Pharmacopœia. In spite of this, the following valuable drugs had been refused admission by the executive committee after recommendation by the subcommittee on scope: Acetylsalicylic acid, ammonium sulphoichthyolate, diethylbarbituric acid, sodium diethylbarbituric acid, epinephrin, benzoylvinyldiacetonalkamine hydrochloride, amidin, para-aminobenzoyldiethylaminoethanol, the methyl ester of para-aminometaoxybenzoic acid, a well-known silver proteid, and dimethylaminobenzoylpentanol hydrochloride.

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DISCUSSION.

Dr. Harvey W. Wiley, Washington, said that he had listened to the paper with great interest. He had been one of those who had had an opportunity to express an opinion as to the substances that should or should not be admitted to the book. He had no doubt but that some of Dr. Osborne's criticisms were justified, but there was a great difference of opinion upon this point among medical men. If 117,000 prescriptions from physicians were collected and it was found that one particular ingredient appeared in a considerable number of them, it seemed reasonable to conclude that the ingredient had some therapeutic value. Some of these humble drugs might yet become the head of the corner. Dr. Osborne had done much for the Pharmacopœia. It was a much better book than it would have been had he not been a member of the committee. It would be found to be a good book in spite of any defects it might have. Even if we should happen to invite a plebeian to the feast it would not hurt the others. To the other diners it would be none the less good. We could enjoy the meal even if a few peasants were present. He himself had objected to some of the drugs mentioned by Dr. Osborne and in case of a number of them had asked a reconsideration, which had been granted. While it was true that some of them could not be adequately standardized, it could at least be required that they be pure and made of wholesome materials. It was well to have a man of radical tendencies like Dr. Osborne upon the committee. He himself had been called a crank more than once. Even cranks had their place. Criticisms like those in the paper were good; they did the book good.

Dr. Oliver T. Osborne said that if Dr. Wiley was a crank he was glad to be in his class. As to the 117,000 prescriptions, he did not think this an adequate test. The frequency with which a drug was used was no criterion as to its value. It might be foisted upon the profession through advertisements.

Cyclopedia of Current Literature

ACTINOMYCOSIS, A STUDY OF.

Actinomycosis is held by the author to be a more common affection than is generally believed. It is frequently mistaken for tuberculosis or new growth. The usual situations are the jaw, cheek, appendix, and cecum, together with thoracic involvement. Infection cannot occur without a lesion in the skin or mucous membrane. The onset is often acute. Abdominal actinomycosis shows a peculiar liability to fistula formation and a tendency to heal at the site of the initial lesion, with reappearance elsewhere. Jaw cases are more frequent in the fall of the year—abdominal cases in the winter and spring. Abdominal and thoracic forms show a high mortality. In skin and jaw cases the prognosis is satisfactory. The diagnosis of primary pulmonary actinomycosis, even in the absence of abdominal symptoms, must remain doubtful without post-mortem examination. In all of the pulmonary cases encountered by the author there was a previous history of abdominal symptoms. Excision is the best method of treatment, where possible. Otherwise, free incision, curetting, washing with weak iodine solution, packing with iodoform gauze, and large doses of potassium iodide internally should be employed.

The relation between cattle and human actinomycosis is closer than between human and bovine tuberculosis. McKenty (American Journal of the Medical Sciences, June, 1913).

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ANEMIA, TREATMENT OF.

In chlorosis and chlorotic forms of secondary anemia the following recommendations as to treatment, in addition to rest and diet, are made by the author:

The administration of iron in suitable form is the most important part of the medicinal treatment.

When gastric irritation is not present, the following mixture may be given:—

℞ Ferri sulphatis, gr. iij (0.2 Gm.).
Magnesii sulphatis, ʒj (4 Gm.).
Acidi sulphurici diluti, ♏v (0.3 c.c.).
Syrupi aurantii, ʒj (4 c.c.).
Aquæ chloroformi, q. s. ad ℥j (30 c.c.).
M. Sig.: Three times a day after meals.

Or,

℞ Liquoris ferri perchloridi, ♏xv (0.9 c.c.).
Magnesii sulphatis, ʒj (4 Gm.).
Glycerini, ʒj (4 c.c.).
Aquæ chloroformi, q. s. ad ℥j (30 c.c.).
M. Sig.: Three times a day after meals.

If there is slight irritability of the stomach, instead of the above acid preparations, one of the following may be given:—

℞ Pilulæ ferri carbonatis, gr. v (0.3 Gm.).
Extracti aloes, gr. ss (0.03 Gm.).
Ft. in pil. no. j.
Sig.: Two to be taken three times a day after food.

Or,

℞ Ferri sulphatis exsiccati, gr. ij (0.13 Gm.).
Extracti aloes, gr. ss (0.032 Gm.).
Extracti rhamni purshianæ, gr. j (0.065 Gm.).
Ft. in pil. no. j.
Sig.: Three times a day after meals.

When irritability of the stomach is marked, it is advisable to give at first one of the scale preparations of iron, *e.g.*:—

℞ Ferri et ammonii citratis, gr. viij (0.52 Gm.).
Sodii bicarbonatis, gr. x (0.65 Gm.).
Syrupi aromatici, ʒj (4 c.c.).
Aquæ chloroformi, q. s. ad ℥j (30 c.c.).
M. Sig.: Three times a day after meals.

And at night a laxative pill, *e.g.*:—

℞ Extracti aloes, gr. iss (0.2 Gm.).
Extracti rhamni purshianæ, gr. ij (0.13 Gm.).
Extracti nucis vomicæ, gr. ¼ (0.016 Gm.).
Ft. in pil. no. j.
Sig.: To be taken each night at bedtime.

Hemoglobin may be given with advantage, most conveniently in cachets containing 12 grains of the powdered hemoglobin. Two of these are to be taken three times a day, after food. Where improvement is slow, the addition of small doses of arsenic to the iron preparations is valuable; thus, Fowler's solution, 2 minims (0.12 c.c.), may be added to the ammonic citrate of iron mixture, or arsenic trioxide, gr. 1/40 (0.0015 Gm.), to the sulphate of iron pill above referred to.

In exceptional cases in which marked gastric irritation is present, it may be necessary to give for a few days a mixture of bismuth and alkali, such as:—

℞ Bismuthi subcarbonatis, gr. x (0.65 Gm.).
Sodii bicarbonatis, gr. xx (1.3 Gm.).
Mucilaginis tragacanthæ, ʒij (8 Gm.).
Spiritus chloroformi, ♏x (0.6 c.c.).
Aquæ menthæ piperitæ, q. s. ad ℥j (30 c.c.).
M. Sig.: Three times a day before meals.

The diet in such cases should consist of liquids, such as peptonized or citrated milk, given every two hours. With rest in bed, the gastric irritation usually subsides rapidly, and the iron preparations can then be employed. W. H. Willcox (Practitioner, September, 1913).

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ARTERIOSCLEROSIS, CAUSE AND PREVENTION OF.

The author holds that the cause of most cases of arteriosclerosis is some protein or protein derivative to which the cells of the individual are, or have become, sensitive. This sensitization dates usually from some definite medical event altering the relation of the cellular physiology of the person to some ordinary food material. Most arteriosclerotics, indeed, give a history of a severe illness or shock about four years before they develop conscious symptoms.

The treatment advocated consists of such drugs as are indicated in the individual case and in the removal from the dietary of all meat, fish, eggs, and stock soups, the administration of serial doses of castor oil, and the institution of a course of physical training suited to the individual. The proteins are then returned to the diet one at a time, beginning with cheese, which seems to be the safest of all. Fruit, vegetables, bread, butter, and cereals are allowed without restriction. This diet the author names the "few protein" diet, in contradistinction to the "low protein" diet of other writers, and it is founded upon the belief that damage is due to protein poisons that are specific to the individual, and that if they are harmful at all, small quantities may be nearly as bad as larger amounts.

The discovery of the proper diet must depend upon study of the particular person. The offending protein may be one that has been abused, and often enough it may be the one most craved when it is taken away. It has seemed to the author that those under his care have done much better on the few protein diet of liberal quantity than on the low protein diet. Louis Faugeres Bishop (Medical Record, September 20, 1913).

ARTHRITIS, PITUITARY EXTRACT IN RHEUMATIC.

The authors report 6 cases of multiple rheumatic arthritis in children, and 4 cases in adults,—1 of rheumatic arthritis, 1 of muscular rheumatism, and 2 of osteoarthritis,—in which injections of pituitary extract yielded marked benefit.

All these cases showed improvement in the general condition, in the pains, swellings, and motions of the joints affected, and in the action of the bowels. The blood-pressure was elevated throughout the treatment. There was a slight, irregular rise in temperature during the first week or ten days. Nothing significant was found in the blood or urine. The adult patients were slightly nauseated and suffered head symptoms, such as giddiness, lightness, and headache.

The material used was made by putting 0.3 Gm. of desiccated fresh pituitary body of the ox into 30 c.c. of sterile physiological salt solution. To this was added 0.3 gr. of chloretone crystals, and it was allowed to stand for three hours. The mixture was then filtered through filter paper. The filtrate was boiled and kept in a sterilized bottle with a rubber cap. This extract tends to deteriorate and it should not be used after three weeks. Under thorough aseptic precautions the patients had no sign of needle infection, nor was there much pain from the (intramuscular) injections. One c.c. of the preparation was used at a dose in every case except the first one, in which 2 c.c. were used. Injections were given daily and later on alternate days. C. Wallace and F. S. Child (Medical Record, October 4, 1913).

ATROPHIC RHINITIS, TREATMENT OF.

Two effects are admittedly desirable in the local treatment of atrophic rhinitis: (1) antisepsis, to overcome the

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purulent complication and ozena, and (2) stimulation of the mucous membrane, with hopes of exercising, rejuvenating, or multiplying what secretory cells may remain. These conditions the double iodide of mercury and potassium, according to the author, fulfills in a most complete manner. The salt is made by dissolving the red iodide in a weak solution of potassium iodide; approximately twice the bulk of the latter will put the former in solution to form the double compound. While the red iodide has germicidal strength in dilutions of 1:40,000, the double salt is approximately twice as strong.

Recently the author has used this compound in 1 per cent. solution as a spray in all cases of atrophic rhinitis, and the result has been so rapidly conclusive that he feels no hesitancy in stating a preference for it. Results were obtained in half the time previously required and a number of the cases were relieved in a month's time, having been treated twice or three times a week. Recurrence is, however, to be expected if the patients abandon care and cleanliness.

More or less tolerance to the irritating qualities of the solution is developed as the treatment is carried out, but it is seldom necessary to increase the strength of the solution above 1 per cent. In cases with membranes less insensible than in atrophics, a weaker solution is equally effective as germicide.

The following formula is used in atrophic rhinitis:—

℞ Red iodide of mercury, 1 Gm. (15 grains).
Potassium iodide, 2.2 Gm. (34 grains).
Distilled water, 100 c.c. (3⅓ ounces).
M. Sig.: Poison; use only in spray; do not swallow.

Douglas Macfarlan (Journal of Ophthalmology, Otology, and Laryngology, October, 1913).

COLLES'S FRACTURE, TREATMENT OF.

In a few cases of Colles's fracture there is practically no deformity, and in a large number there is very little. The author advises that these fractures be never broken up, for whenever this is done, the periosteum is torn at the line of fracture and ripped away from either fragment; though the immediate result is a perfect contour, the final result is disappointing, as a fairly large mass of callus always forms, which exaggerates the primary deformity. In a majority of the cases deformity is very marked, and it is in these cases only that correction should be attempted. Immobilization with a plaster-of-Paris bandage is advantageous in that it can be very accurately applied, follows all the natural eminences and depressions, and on being cut through at the sides, can be converted into a splint, which can be quickly taken off and put on again. This conversion should be done on the day after it is first applied, and every day thereafter the wrist-joint carefully moved, the muscles of the forearm methodically massaged, and the motions of the fingers gone through. On the fifth day the cast may be discarded, and a simple starch bandage substituted for two days more. At the end of ten days, power in the muscles of the fractured arm is almost as good as in the sound limb. Patients thus treated have a minimum of deformity, and perfect function always results. A. O. Wilensky (New York Medical Journal, October 25, 1913).

DIPHTHERIA CARRIERS, TREATMENT OF.

Treatment aimed at destroying the diphtheria organisms in the tonsillar crypts has proved successful, in the author's hands, in ridding diphtheria carriers of these bacteria. Of 22 carriers

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treated from three to ten days with antiseptic sprays and gargles, only 2 became negative. But of the remaining 20, 14 had the crypts of their tonsils treated with silver nitrate. Of the cultures taken twenty-four hours later 10 were negative. The remaining 4 became negative within three days.

In applying the silver nitrate, a 5 or 10 per cent. solution is used. It should be made up with distilled water and kept in a dark-colored bottle or a dark place. Applicators made of a flexible metal and about 11 inches long are used. The end which is to be inserted into the crypts must be small (about 0.75 mm. in diameter) and roughened. Around it is tightly wrapped a very small amount of cotton—only a few fibers, so that the cotton-wrapped applicator measures less than a millimeter in diameter. This is bent about a centimeter from the end so that the angle formed slightly exceeds 90 degrees. It is then dipped into the silver-nitrate solution, and all excess removed. With the tongue well pressed down, the crypts should be probed, preferably from below upward. To find the smaller ones it is often necessary to run the end of the applicator gently over the surface of the tonsil until it finds a depression. Several of the smaller ones may be probed without redipping the applicator into the nitrate solution, but for the larger ones it is best to redip each time.

Bacteriologic studies showed that the 5 per cent. solution of silver nitrate will destroy all bacteria with which it comes in contact. Its use is more efficacious and less dangerous than the use of a staphylococcic culture in diphtheria carriers. With it were combined a mild alkaline and antiseptic spray for the nasal cavity and a 1 per cent. solution of hydrogen peroxide as mouth-wash and gargle. Henry Albert (Journal of the American Medical Association, September 27, 1913).

ECTOPIC GESTATION.

From reading textbooks it might be imagined that the typical case of ruptured ectopic gestation sac would present itself in the following way: The patient is aged about 30 and has had several children and a relative interval of sterility; then occurs a short period of amenorrhea or some modification of the menses, with signs, both general and local, pointing to pregnancy. There is next a sudden attack of pain and collapse; a typical vaginal discharge, cast, membrane, or clot is passed, and examination reveals a lateral pelvic swelling alongside the uterus.

According to the author, nothing like this is actually found; as often as not, the patient stoutly denies the possibility of pregnancy because she has not "gone over her time." The ovum may be less than 4 weeks old, which explains that discrepancy. Further, in the majority of these cases, no abnormal physical signs are to be detected, the sac being no larger than a pea in many cases. Again, from 2 to 3 pints of effused blood in the pelvic cavity and abdomen may produce no characteristic depression of Douglas's pouch, as long as the blood remains reasonably fluid.

The flanks should on no account be percussed in a patient so gravely ill, and, besides, a large effusion of blood would be needed to overflow the pelvis into the flanks. Simple inspection of the patient is sufficient as a basis for the diagnosis, the prominent feature being a startling pallor. A pulse below 110 does not negative grave bleeding.

As to treatment, the patient's life can be placed out of danger in less than a

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minute after incision by plunging the hand down into the pelvis, elevating the uterus, and placing an artery forceps on each side of the sac. The belly may then be emptied of blood and clots. In the great majority of cases the tube alone should be removed. Where the site of rupture encroaches on the cornu, a small wedge-shaped area of uterine tissue should be excised with the tube and secured by three deep muscular sutures. An hour later, after the patient has had saline solution by rectum, or possibly intravenously, she will be warm, with an appreciable pulse at the wrist, steadily falling in frequency from hour to hour. Tincture of iodine, applied to the abdomen five minutes before the operation, and again just before incising the parietes, will insure healing by first intention. R. D. Maxwell (Practitioner, September, 1913).

EPIDIDYMITIS, TREATMENT OF.

The author speaks very highly of the advantages of excision and opening of the epididymis in cases of acute epididymitis. Even in a mild attack the operation is expedient to prevent the formation of pus. The operation, a modification of that of Hagner, is comparatively simple. A 2- to 4- inch incision is made over the most prominent portion of the swelling, the testis is delivered and wrapped in warm cloths moistened with sterile saline, and the inflamed portion of the epididymis punctured in several places to relieve tension and determine the existence of pus. If pus is found it is evacuated by an incision and a short drain of silkworm gut inserted. The testis is then replaced, the subcutaneous tissues united by 1 or 2 small catgut sutures and the wound closed with silkworm gut. If no pus focus is found, drainage is omitted. The immediate results in acute cases are remarkable. The pain ceases, the swelling subsides, and the patient is comfortable from the time he comes out of the anesthetic. The remote results are equally noteworthy when it is considered that no relapses occur. This should be the treatment of choice in all cases, however caused. L. S. Eckels (Journal of the American Medical Association, August 16, 1913).

EPILEPSY, THE PITUITARY IN.

Examining the pituitary region with the X-rays in a number of cases of epilepsy, the author was led to observe in particular a class of patients who, with an uneventful history, no injury, the ordinary children's diseases, previous good health, somewhere between the ages of 15 to 35, began to have attacks of *petit mal*, gradually increasing in severity and frequency. In this type of cases there were noticed decided departures from the normal in the topography of the sella turcica. These changes were but rarely found in chronic epileptics. The changes consisted for the most part in an overgrowth of the anterior and posterior clinoid processes, which in addition to an increase in area and length are gradually folded over and down on the pituitary gland, inclosing it within a bony basket. In addition to this change, which was evidently one requiring a considerable time for its accomplishment, there was often noticeable a decided difference in the size of the pituitary fossa and therefore of the gland itself. The fossa was largely or completely roofed over in some cases, the anterior and posterior clinoid processes not only meeting but overlapping. The frequency with which this condition was found in this class of cases was striking and suggests an etiological relationship. G. C. Johnston (Jour. Amer. Med. Assoc., Nov. 1, 1913).

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EPILEPSY, TREATMENT OF IDIOPATHIC.

Treatment with extracts of the ductless glands was tried by the author in essential epilepsy. Rectal injection of fresh extracts of ox parathyroids and thyroids sometimes yielded striking benefit. A few patients were relieved completely thereby almost at once, while in others a slower, but distinct, improvement was observed. In many of these cases the condition was of several years' standing and bromide treatment had been tried without success. The existence of diminished thyroid activity in epileptics is shown (1) in that the administration of large doses of fresh extract causes no loss of weight or tachycardia; (2) in that in some cases it regularizes the intestinal functions (constipation being one of the stigmata of hypothyroidism), and (3) in that in children the treatment accelerates growth, dentition, and mental development, by causing disappearance or attenuation of the epileptic seizures. It is to be noted, however, that there is wide individual variation and that the degree of thyroid insufficiency does not necessarily correspond with the severity of the clinical manifestations. Each case must, therefore, be dealt with, as it were, in an experimental manner, to ascertain the amount of thyroid extract suitable in the individual patient. The rectal route of administration was adopted in the author's cases in order to obviate the effect of the gastric juice on the extract.

The fact that it is not possible to differentiate with certainty between idiopathic epilepsy and secondary epilepsy—due, *e.g.*, to meningoencephalitis—is in large measure responsible for cases of failure of the thyroid treatment. Of 40 cases which the author had at first considered of the idiopathic variety 8 were recognized subsequently as being secondary to meningoencephalitis, and in these, accordingly, the treatment proved ineffectual. Among the other 32, 8 were promptly and permanently improved in such degree as to be practically cured, and 18 were improved in three to six months. In 4 children with essential epilepsy the treatment was also successful, while in the remaining 2 cases, already in the stage of dementia, the treatment failed. G. C. Bolten (Nederlandsch Tijdschrift voor Geneeskunde; Semaine médicale, September 17, 1913).

GASTRIC AND PANCREATIC CARCINOMA, RELATIONSHIP BETWEEN.

The author reports a case in which the autopsy showed carcinoma of the stomach with ulceration, carcinoma of the body of the pancreas, purulent infection of the periportal spaces around one branch of a vein in the liver, general acute fibrinopurulent peritonitis with extensive fat necrosis, and chronic adhesive peritonitis in the right hypochondrium and around the pancreas.

The primary focus of disease was in all probability a gastric ulcer, which later suffered carcinomatous degeneration, the carcinoma then involving the pancreas, which in turn became the seat of a chronic interstitial inflammation. In a very careful study of the patient none of these lesions had been suspected except the pancreatitis, which was considered because of persistent pain in the left lumbar region. There had been no manifestation of such profound tissue change for a period of several months, and the condition culminated finally in an attack characterized only by moderate pain, jaundice, and slight fever.

From this case and several others on record highly suggestive of the same condition, the author feels it is necessary to conclude that where the pancreas is attacked early in the course of pyloric or

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duodenal carcinoma, there may arise a mutual functional compensation between stomach and pancreas which permits both organs satisfactorily to perform their duties, with a decided absence of symptoms of disease of either, even though there be extensive destruction of tissue. E. A. Schumann (Annals of Surgery, September, 1913).

HEPATIC CIRRHOSIS, DUODENAL ALIMENTATION IN.

Duodenal alimentation was applied by the author in 6 cases of beginning cirrhosis. In 5, gastric ulcers were present; in 1, pure cirrhosis with dilatation of the heart. In each of the 6 patients the liver became markedly smaller already after two to three days, during duodenal alimentation assuming a size almost normal. In 4 patients the result was lasting. In 1, a few days after the termination of the feeding the liver began to grow larger, while in another, with pure cirrhosis and dilated heart, the liver quickly assumed its original large proportions. The influence of duodenal feeding in this case was very marked, but not lasting. The author's experience so far leads him to conclude that duodenal alimentation contributes greatly toward diminution of the functional work of the liver. This rest treatment is of benefit whenever the organ is considerably impaired. Max Einhorn (Medical Record, July 26, 1913).

INTESTINAL STASIS, LIQUID PARAFFIN IN TREATMENT OF.

When pure, medicinal liquid paraffin or petroleum oil is a neutral, tasteless, colorless, and odorless liquid not liable to hydration, oxidation, or saponification. It is extremely resistant to the action of chemical agents and passes through the alimentary tract unaltered and unabsorbed. Its action is twofold,—lubricant and protective,—and each of these actions is of great value in intestinal stasis. The lubricant action, though appreciable in the jejunum and ileum, is mainly exercised in the large intestine with its semisolid and solid contents. Full doses may shorten the time of passage of the gastrointestinal contents from the stomach to the rectum by as much as one-half.

The protective action tends to prevent any local irritation or abrasion predisposing to bacterial invasion and toxic absorption with resulting alimentary toxemia. Pritchard gives a liquid paraffin emulsion to all infants suffering from tormina, enterospasm, or dysperistalsis, and believes there is nothing better to restore the bowel function in cases of intestinal intoxication in children. In the author's own practice liquid paraffin has replaced all the usual aperient drugs given to children, including castor oil. In the mucous colitis of adults, generally merely an accompaniment of intestinal stasis, he has also had excellent therapeutic results from the administration of liquid paraffin.

In most cases the plain liquid paraffin may be given without any flavoring agent, though the addition of such agents as lemon and peppermint makes it still more palatable. It is best to give the paraffin in divided doses at regular intervals two or three times daily. The dose is often increased from 1 or 2 teaspoonfuls to 1 or more tablespoonfuls, thrice daily. As a rule, ½-ounce to ounce doses are sufficient even in obstinate cases, particularly if the patient is having abdominal massage or is able to take a fair amount of exercise. Unlike most aperients, the remedy does not lose its effect upon prolonged use. The full lubricant effect is not obtained for

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several days. When the bowels have begun to act regularly the dose may be very gradually diminished and the minimum effective dose then continued. In children teaspoonful doses are usually sufficient, and ½-dram doses, in infants. Pritchard recommends the following emulsion for infants:—

℞ Liquid paraffin, ♏xx (1.25 c.c.).
Benzoic acid,
Saccharin, of each, gr. 1/32 (0.002 Gm.).
Oil of cinnamon, ♏1/16 (0.004 c.c.).
Decoction of Irish moss, up to ʒj (4 c.c.).
Sig.: One to four teaspoonfuls from three to six times a day.

Liquid paraffin is useful as a routine remedy in ordinary constipation apart from actual stasis, particularly when associated with flatulence or distention. The value of its lubricant action in painful hemorrhoids is obvious. R. Murray Leslie (American Practitioner, August, 1913).

LEAD POISONING, TREATMENT OF.

The employment of electrolysis or deionization in incipient cases of industrial lead poisoning is advocated by the author. In his cases double, that is arm-and-leg, baths were used, the arms being placed in one bath, the legs in the other, and the current thereby made to pass through the whole body. The bath was given daily or every second day, the voltage being 16 and the ampèrage 20 to 40 milliampères. The positive pole was placed in the foot bath and the negative in the arm bath. The baths may be made of earthenware or wood, and the electrodes of pure aluminum. If the current is introduced gradually by a suitable rheostat no shock is felt, nor is any unpleasant sensation experienced by the men. The resistance of the bath water is reduced by adding common salt.

Fourteen workmen, who looked especially pale and cachectic, were treated. Although not voluntarily complaining, 3 of them did not feel quite strong, and 1 had been off work for ten weeks on account of complete paralysis of hands, fingers, and wrists. Most of the men had a well-marked blue line on the gums, and nearly all some degree of paresis of the muscles of the hands, wrists, and forearms, so that they could not grip well. Under the treatment the muscular power improved, the pallor of the face lessened, and the men experienced a feeling of well-being to which for months they had been unaccustomed. Recovery from complete wrist-drop was hastened. In the bath water lead was found, even in the case of the patient with double wrist-drop, who had not worked for ten weeks. The blue line on the gums became thinner, and discontinuous, after which it gradually faded away. In short, the treatment proved itself to be a means whereby lead may be removed from the body, sickness and suffering prevented, and the labor capacity of the workmen improved. Sir Thomas Oliver (Lancet, August 23, 1913).

LUDWIG'S ANGINA, TREATMENT OF.

The author reports a case of this condition in which the imminence of edema of the larynx and other distressing symptoms prompted the use of streptococcus vaccine. The dose given was 100,000,000. Continuous application of an ice poultice was also prescribed. Within twenty-four hours the symptoms subsided, and the temperature rose from 99° to 101° F., but otherwise there was no reaction. Next day points of tenderness developed, so that by the third day after the onset of the cellulitis distinct pointing could be demonstrated. A free lateral incision was made and a large quantity of pus evacuated, the discharge

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continuing for ten days after. All the symptoms were promptly ameliorated.

The absence of reaction to the vaccine and the subsequent course would seem to indicate that the proper dosage in this case had been given.

The author points out that prompt incision has almost invariably prevented gangrene of the floor of the mouth and has in this condition been employed in all cases that have been followed by recovery. He estimates the mortality of all cases at about 25 per cent., and that of the selected, promptly treated cases at about 5 or 10 per cent. Samuel H. Brown (Medical Record, September 6, 1913).

MEASLES, DIAGNOSIS OF.

In the differential diagnosis between scarlet fever, measles, and German measles, a clinical sign which often proves very helpful consists in free perspiration during the entire course of German measles, whereas the skin is invariably dry and more or less hot in scarlatina and morbilli. The free perspiration is due to the fact that in German measles not only the lymphatic glands (including the spleen, which is often greatly enlarged), but the sudoriparous glands as well, are involved. Herman B. Sheffield (Medical Record, August 9, 1913).

NEOSALVARSAN, SUBCUTANEOUS INJECTION OF.

Report of 1000 subcutaneous injections of neosalvarsan without necrosis in a single case. With an ordinary hypodermic syringe from 0.1 to 0.5 and even 0.9 Gm. of neosalvarsan, dissolved in 1 c.c. of 0.7 per cent. salt solution made with sterile freshly distilled water, was administered. A solution of 0.1 Gm. of neosalvarsan in 1 c.c. of sodium chloride solution seemed to be best tolerated, while the quantity of fluid which just fell short of producing pain by pressure on the tissues was found to be about 3 c.c. In making very concentrated solutions the salt solution must be slightly warmed. The injection is scarcely felt by the patient, though in 4 instances there was immediate neuralgic pain radiating even to the tips of the toes, but passing off in a few minutes, as after the injection of mercury. Most of the patients felt a slight degree of pain. Often patients stated that the injections were much less painful than those of mercury salicylate. Only infrequently was the author compelled to abandon the subcutaneous method on account of the pain. Injections causing pain were usually accompanied by transient swelling, but the large majority of injections produced absolutely no swelling or infiltration. No patient was ever obliged to keep to his bed on account of tissue infiltration. Some delicate private patients even preferred the subcutaneous injections to the intravenous.

It became evident that evil effects of subcutaneous injections of neosalvarsan are closely related to errors in technique. The essential point is that the fluid should not be injected into the subcutaneous fatty tissue, fascia, nor into the muscle, but strictly *over* the fascia. After a little experience one can appreciate the elastic resistance of the fascia, particularly in lean persons,—who should at first be selected as subjects for treatment,—resistance being in marked contrast with the more fluid sensation in the fatty or muscular tissues. In very fat cases the patient is apt to offer resistance and this sometimes renders a clear determination of the fascia impossible.

The trochanter major is the seat of election for the injection because there

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the fascia is firmest. On some occasions, however, the back was successfully used.

If an injection is made into the fatty tissue too superficially, there will occur an extensive infiltration of irregular contour, not very hard, distinct from the skin, while if one infiltrates the loose connective tissue between the fat and the fascia, which easily happens in lean persons with a very movable skin, a round or oblong wheal will remain. Only the injections made into the free space above the fascia are entirely devoid of reaction.

To test the correctness of position of the point of the needle the author always injects first some 0.7 per cent. salt solution. With an easy working syringe one can feel, when the syringe is being emptied without the slightest pressure, that a cavity is being injected into, while if infiltration of the tissues occurs, resistance is felt.

The absorption and internal effect of neosalvarsan, used subcutaneously, are very similar to those taking place when the intravenous method is used. Seventy-five to 85 per cent. of the neosalvarsan is absorbed within one week, while after six weeks only 5 per cent. will remain unabsorbed. Vigorous massage of the tissues surrounding the site of the injection is advisable.

The therapeutic effects of neosalvarsan given subcutaneously are at least equal to those obtained by the intravenous method. Whenever practicable, the author follows up an intravenous injection of salvarsan with one or several subcutaneous injections of 0.5 Gm. of neosalvarsan in order to obtain a curative action more persistent than by other methods, as well as somewhat different in itself. A negative Wassermann reaction after the subcutaneous use of neosalvarsan is easily obtained. Wilhelm Wechselmann (Münchener medizinische Wochenschrift, June 17, 1913).

OXYGEN, ADMINISTRATION OF, TO THE FETUS.

Inhalation of oxygen by the mother was found by the author to increase the fetal heart rate. In 3 out of 11 cases the increase after inhalation of oxygen for five minutes was only 2, 4, and 8 beats respectively; but in the remaining 8 cases it was from 16 to 25 beats. The true increase was even somewhat greater, as the inhalation of oxygen appears to excite uterine contractions, and in at least 4 cases the counting was done during a contraction, which is well known to slow fetal heart action. Out of 9 tests it was found that the fetal movements were increased in 5; in 2 markedly increased.

The fetal and maternal circulations being really one, the oxygen evidently enters the blood of the fetus. This being the case, it would seem a wise precaution to administer oxygen to the mother in cases of prolonged second stage in partial separation of the placenta, or whenever slowness or irregularity of the fetal heart sounds indicates impending asphyxia. George P. Shears (Medical Record, July 19, 1913).

PEDICULOSIS CAPITIS, TREATMENT OF.

After many years of experimentation with numerous drugs, the author is of the opinion that there is but one successful way of removing the nits—other than cutting the hair—viz., by mechanical means. Patient, persistent removal of nits strand by strand, with the hand, sand paper, or a fine-toothed comb, is the only successful plan for pronounced cases. The various drugs may loosen a few nits, but the majority will

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succumb only to forcible eviction. This is something that must be taught, explained, and shown to the parents of the children thus infested. Jacob Sobel (New York Medical Journal, October 4, 1913).

PELVIC ADHESIONS, X-RAYS IN TREATMENT OF.

Late re-examination of a number of gynecological cases subjected to X-ray treatment by the author showed that in the large majority of instances the treatment had caused a marked loosening of adhesions which had previously bound the uterus in a position of backward displacement. In 2 reoperated cases of tuberculous peritonitis it was found that the pre-existing adhesions had undergone complete absorption. Similar results were noted in 3 patients with adhesions of the pleura. There was also a case of ovarian cyst in which the complete disappearance of discomfort and functional disturbances after X-ray treatment could be ascribed to nothing else than reabsorption of the adhesions previously noted at operation, but not disturbed at the time because the anesthetic was taken badly. The author considers X-ray therapy a valuable means of relieving discomfort or pain due to adhesions. M. Fraenkel (Zentralblatt für Gynäkologie, October 18, 1913).

PERITONEAL INFECTION, ETHER IN TREATMENT OF.

For some time the author has been using ether routinely to cleanse the peritoneum in all operations where infection of it is feared. His impression has been that this is an excellent procedure, and that ether is the best of all antiseptics for the peritoneum. The operative measures having been completed, the intestines are freely washed with the ether, poured into the peritoneal cavity for the purpose. Often care is not even taken to remove the surplus, some of the ether remaining in the abdomen and volatilizing there after closure of the incision. Where the patient has partly come out from the anesthesia, he offers resistance when the ether is poured in. Soon, however, he becomes quiet again. In the hours succeeding the operation he is usually quite calm, and often requires no morphine. The pulse is good. The incidence of vomiting seems to be reduced. Finally, most of the patients thus treated recover in an ideal manner. No ill effect from the ether was ever observed. Morestin.

Another author reports having obtained remarkable results in many cases of grave peritonitis of appendiceal origin by cleansing the peritoneum with ether. Témoin. (Société de chirurgie, Paris; Progrès médical, May 31, 1913.)

PERITONITIS, TREATMENT OF.

Injections of horse serum were administered by the author in 34 cases of incipient or developed peritonitis, some of the postoperative type and others arising from various different causes. In adults 40 c.c. of sterile serum were injected intramuscularly, in children 20 c.c. Although in a few cases the injections had no noticeable effect, in many there was strikingly rapid subsidence of the peritoneal disturbance. T. Hirano (Deutsche Zeitschrift für Chirurgie, September, 1913).

PITUITARY EXTRACT, CONTINUOUS ADMINISTRATION OF.

In observations on 18 individuals who were given dried extract of the pituitary gland without other medication, 17 were found to show a rise in systolic blood-pressure, the greatest rise being 28 mm.

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of mercury; usually a corresponding rise in diastolic pressure occurred. The changes in the pulse rate were inconstant; an increase was generally observed, though in 2 individuals the rate was decidedly decreased. Six individuals noted a diuretic effect. Glycosuria was never observed. Diarrhea developed in 7 cases, and 4 previously costive had daily movements during the period of taking the drug. Four individuals were apparently much benefited by the rise in pressure and general stimulative effect of the glandular extract upon the unstriated muscle and one person was benefited through the diuretic effect. In the remaining patients little effect was noted except by those who developed the annoying diarrhea. The author concludes that prolonged administration of extracts of the pituitary gland exerts a distinct pressor effect upon the peripheral vascular apparatus, which continues an appreciable time after the discontinuation of the drug. This is apparently the only persistent effect, the others being variable and indefinite. Musser (American Journal of the Medical Sciences, August, 1913).

PITUITARY EXTRACT IN OBSTETRICS AND GYNECOLOGY.

From an experience with pituitrin extending over a year, the author is convinced that it will produce brilliant and rapid effects. The drug will not act in a pregnant uterus except if labor pains be present. As a method of inducing labor it fails if used alone, but combined with the ordinary methods it has a useful field after uterine action commences.

A favorable condition for its use is secondary uterine inertia, provided one is satisfied that the position and presentation are normal, or relatively so, that the head is engaged, and that the woman is not exhausted from pathological causes and presents a thinned lower uterine segment, meaning a forerunner of uterine rupture.

Heart and kidney affections that exist with high blood tension and severe albuminuria do not contraindicate the use of the drug. Failures may be ascribed to (1) impure or unreliable manufacture, (2) too little of the drug being used. In favorable cases, powerful uterine contractions occur in from five to ten minutes after administration.

In cases of abortion, *i.e.*, up to the third month, the action of pituitrin was very successful in the author's experience. If an abortion is unavoidable, as shown by hemorrhage, pain or dilatation of the os, and the expulsion of the product of conception is tardy, and where formerly one was likely to curette or manually remove, pituitrin can be used with success. Where the abortion is incomplete an injection of the drug will hasten its expulsion. In post-partum hemorrhage prompt administration will cause a very quick and complete contraction of the uterus. This, however, is rather evanescent, and where simple means do not control the hemorrhage, an injection of ergot should immediately follow the pituitrin.

Theoretically, the drug should not be used in placenta previa for fear of increasing the placental separation as the result of powerful uterine contractions and concomitant retraction of the lower uterine zone; but in practice one of the most brilliant results obtained by the author was in a complete previa. There have been cases reported where pituitrin has shown a distinct narcotic effect.

Persistent subinvolution, where local treatment fails and curettage is refused, forms a useful field for pituitrin, especially where the condition is due to re-

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tention of secundines. A hypodermic injection once or twice a day rapidly causes a cessation of the bloody discharge, expels blood-clots or fetal products and produces rapid involution.

As a temporary means in hemorrhage from a uterine fibroid it finds a distinct indication. In several cases results were very satisfactory in hemophilia where nothing seemed to check uterine bleeding. S. Marx (American Journal of Surgery, September, 1913).

RHINITIS, ATROPHIC, AND OZENA, TREATMENT OF.

The use of a 5 per cent. suspension of scarlet red in mucilage either of acacia or of tragacanth is recommended by the author in these conditions. The technique of application is as follows: The nasal cavities are first thoroughly sprayed with Dobell's solution under a pressure of 40 pounds. This softens the crusts, which are then removed with a cotton applicator. The suspension of scarlet red is next vigorously rubbed, with an applicator, over the mucous membrane of every part of the nose. As the suspension remains adherent for about two days, the treatment was carried out every second or third day at the outset. As the condition improved, the interval of time between treatments was increased. Some of the patients were given the scarlet red in a 1 per cent. suspension in white petrolatum for home use, to be applied in the form of a spray once a day. The method was employed in all stages of atrophic rhinitis. After two to three weeks of treatment the mucous membrane began to undergo regenerative changes; the odor became less marked, and eventually disappeared. There was a decrease in the formation of crusts, which were softer and easily removed.

From being thin, shiny, and anemic in appearance, the nasal mucosa became reddened and thickened, and assumed a healthier tone. This demonstrates that scarlet red must exert a stimulating effect upon the membrane far in excess of that of other medicaments. There was noted a concomitant improvement in the general condition of the patients. The number of patients treated was 20, and all were benefited. Louis Jacobs (New York Medical Journal, May 31, 1913).

SALVARSAN AND NEOSALVARSAN, ADMINISTRATION OF, BY ENTEROCLYSIS.

Thirty-seven rectal injections of these drugs have been given by the authors. The method used is simple. In the preliminary treatment, insistence is made on three points: that the patient be hungry, thirsty, and empty. He is then placed on the table and given morphine hypodermically (in children, a dose of paregoric by mouth), to relieve possible irritation of the rectal tube and constipate the bowels. He is then placed on his right side, semiprone, with the head of the table tilted down, and the rectal tube or catheter, about a No. 20 French for adults, passed for a distance of about 12 inches or more.

The solution is prepared exactly as in the intravenous method, except that it is diluted to exactly 240 c.c. The apparatus is a cylindrical vessel with rubber tubing about 6 inches long leading to a glass dropper-bulb, such as is used in intravenous anesthesia, by means of which one can see the rate of flow. From this, tubing about 2 feet long leads to the catheter. The flow is regulated so that it drops at the rate of 60 drops per minute, taking just one hour for the 240 c.c. to pass in. This is ample time

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for absorption and does not irritate the rectum.

Of 37 injections given, 5 were with neosalvarsan and 32 with salvarsan. There were no bad after-effects, except that 1 patient had a severe vomiting and weak spell, probably due to his having disobeyed instructions and taken beer and eggs just before treatment. A number of cases showed moderate vomiting and urinary frequency after the injections. The patients were all treated in the office. All the various manifestations of syphilis cleared up with this method, and it was difficult to say whether or not the intravenous administration would have done so any more quickly.

The authors hold that it should be used in children in preference to other methods, and that it should be the method of choice when the intravenous method is not feasible. Ludwig Oulmann and J. L. Wollheim (Journal of the American Medical Association, September 13, 1913).

THEOBROMINE SODIUM SALICYLATE, INTRAVENOUS INJECTIONS OF.

Several cases illustrating the practicability of intravenous theobromine sodium salicylate injections are reported by the author. The solution is readily prepared and sterilized, and when properly given produces no reaction. While 20 c.c. of a 5 per cent. solution was found a convenient standard, it may be modified to suit individual requirements. The measure seems particularly indicated in uremia, in the anuria of cardiovascular-renal disease, and in some types of primary renal disease when internal administration is impracticable or impossible and prompt diuretic action is necessary. It is further suggested that these injections may be of benefit in some types of uremia accompanying eclampsia; in conjunction with other forms of treatment, it may help in starting diuresis. S. Neuhof (New York Medical Journal, October 25, 1913).

TUBERCULOSIS OF THE KIDNEY, DIAGNOSIS OF.

The most prominent symptoms of renal tuberculosis are those referable to deranged bladder functions. These may be decidedly intermittent in their severity. Intermittent pyuria suggests tuberculosis of the kidney. Pyuria without demonstrable bacteria by smear or culture in a catheterized specimen is likewise suggestive. In the absence of mixed infection the temperature is normal or shows only a slight evening elevation. While enlargement of the diseased kidney is usually manifest on palpation, it is important to remember that compensatory hypertrophy may lead to erroneous conclusions in determining the diseased organ. Thickening of the vaginal portion of the ureter is of value in diagnosis, but by no means characteristic of tuberculous infection.

The tuberculin reaction is of doubtful value; the subcutaneous injection should be employed, and its results are significant only in the presence of increased kidney or bladder symptoms. By far the most important agent in determining the diagnosis is the cystoscope. Only by its use can one determine the extent of disease as well as the condition of the opposite kidney.

The Bloch method of inoculation of guinea-pigs (injection in the inguinal region, after slight injury to the inguinal glands by compression) should be used, because it is equal in reliability to the older method, and the diagnosis may be made in at least 77.3 per cent. of the cases in ten days, as compared to six

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weeks by the subcutaneous or intraperitoneal methods (which should also be used as controls). A positive laboratory result by either method determines the diagnosis of tuberculosis of the genitourinary tract—of renal tuberculosis in the female, the exact focus in the male to be determined by additional clinical and laboratory means. A single negative laboratory result does not determine an absolute negative diagnosis of renal tuberculosis, as the manifestation of the disease is essentially intermittent. Negative results obtained in 3 successive weekly examinations, however, are of considerable weight. F. E. Keene and J. L. Laird (American Journal of the Medical Sciences, September, 1913).

ULCER OF STOMACH AND DUODENUM, X-RAY DIAGNOSIS OF.

The X-ray has been found by the authors to offer most valuable assistance as an aid in the diagnosis of peptic ulcer. In *duodenal* ulcer there is found an excessive motility of the stomach, with rapid evacuation of the contents, the greater portion being emptied out within the first half-hour; there is also hypermotility of the duodenum, with formation, usually, of a vacant area, which remains fixed in all of the X-ray examinations.

The diagnosis of *gastric* ulcer can be made only by the X-ray when the lesion is situated on the anterior surface of the stomach, and along the anterior surface of the lesser and greater curvature. In this condition there is irritation from the ulcer, with consequent hypermotility, but with it is associated a spastic condition of the pylorus, so that for the time being there is practically no expulsion of the bismuth. In gastric ulcer, whatever its situation, one can always look for retention of contents. In certain instances there is a vacant area in the pylorus; frequently there is a tendency to hour-glass formation.

By means of the X-ray one can positively rule out the presence of a duodenal ulcer by observation that the greater portion of the stomach contents remains after an hour. One can also approximately determine the degree of healing of an ulcer, which cannot be as certainly determined in any other way. In duodenal ulcer, when the patient is given the rest treatment and placed upon the proper diet, all symptoms will gradually disappear, and the patient will become, comparatively speaking, well. This usually takes place in from four to five weeks. At the end of this time, however, if a second bismuth examination be made, one will usually find the same characteristic signs present as in the fresh ulcer. If treatment is then further continued, as the ulcer continues to heal, the motility of the stomach returns to a more normal condition, and by making repeated observations over a long period one can observe by the X-ray when the ulcer is healed. Julius Friedenwald and F. H. Baetjer (American Journal of the Medical Sciences, October, 1913).

UTERINE CANCER, DIAGNOSIS OF.

The early symptoms of cancer of the cervix, according to the author's observations, are: (1) a watery discharge; (2) an irritable bladder; (3) slight, irregular bleeding, and (4) a disagreeable odor. In reference to the watery discharge, he does not mean the ordinary leucorrheal discharge that women frequently complain of, but a discharge not unlike beef brine in its appearance. It may not be very profuse, but is enough to stain the linen brownish and irritate the vulva. It is more or less constant for

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a period of from five or six weeks to three or four months before the patient considers herself ill, and is a most important symptom. Slight, irregular bleeding should be immediately investigated, but is not especially an early symptom. Hemorrhage and pain come late in the disease. Cancer of the cervix should be differentiated early from erosion, laceration with inflammation, cystic degeneration, tuberculous ulcer, and chancre. If malignant disease is present a small nodule is to be found. As regards the first three, no examination is complete without microscopic scrutiny. Tuberculous ulcer and chancre are rare and there should be no great difficulty in their diagnosis.

Cancer of the body of the uterus is insidious in its approach and, unlike cervical cancer, may occur in the maiden as well as the woman who has borne children. It is comparatively rare before the menopause, and the earliest symptom is a watery discharge, with slight, irregular hemorrhage, gradually increasing, and pruritus. Pain comes on later in the disease, when the uterus has become enlarged by the new growth and is endeavoring to rid itself of the foreign body. The diagnosis is not difficult with the clinical history. The uterus will be found enlarged, freely movable, and more sensitive than normal, with no perceptible disease of the cervix. In advanced cases a probe gently introduced may show a depth of three inches or more and cause a discharge of bright-red blood. If the first examination does not give a positive diagnosis the uterus should be curetted under an anesthetic, and microscopic examination of the scrapings made. Only rarely has the author found it necessary to make a secondary curetting. R. B. Hall (Journal of the American Medical Association, October 4, 1913).

VON PIRQUET TEST, SIMPLIFIED.

The simple method described by the author consists in using the flat end (about 2 mm. wide) of a sterile wooden toothpick instead of the von Pirquet borer or crisscross scratching with a needle. After cleansing the flexor surface of the forearm in the usual manner, the flat end of the sterile toothpick is dipped into the tuberculin, is next gently pressed on the desired spot on the skin, and, while it is held in the middle by the thumb and index finger, a few turns (2 to and fro turns, *i.e.*, 4 in all) are made by rolling the toothpick on its axis between the fingers. The result will be a very neat round abrasion of the epithelium without the appearance of blood. The same procedure is gone through with the control abrasion, another toothpick being, of course, used.

Among the advantages of this procedure are that it does not frighten the child with the exhibition of bright metal instruments, such as the von Pirquet borer or even a needle, and is done so quickly as to be decidedly less painful to the patient. Louis Shalet (Journal of the American Medical Association, July 5, 1913).

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Clinical Summary

Practical hints from articles and abstracts that have appeared in the Monthly Cyclopedia and Medical Bulletin during the current year.

Acne. TREATMENT. 1. Following lotion advised: Zinci sulphatis, potassæ sulphuratæ, sulphuris præcipitati, of each ʒj; aquæ, ℥iv; to be applied at night. 2. To keep open orifices of follicles, resorcinol in 10 to 15 per cent. paste, recommended. 3. If skin thick, sluggish and oily: Preliminary washing with tincture of green soap. 4. Warm water may be used after incising pustules, to favor bleeding, but for washing cold water is preferable. 5. X-rays of service (*a*) to increase local blood-supply and improve resistance; (*b*) to cause atrophy of sebaceous glands. 6. High-frequency current useful to reduce induration of nodular acne. 7. Massage or local manipulation, to facilitate drainage of ducts. 8. Dermal curet, when pustules cured and superficial epithelium somewhat macerated by resorcin. *Chipman.* Page 283

In acne indurata and pustulosa: Remove comedones and open pustules. Rub into skin at night one of the following pastes: (I) Sulphuris præcipitati, ʒij (8 Gm.); acidi salicylici, ʒj (4 Gm.); petrolati, saponis viridis, ää ℥ss (16 Gm.). (II) Betanaphtholis, resorcinolis, ää ʒij (8 Gm.); saponis viridis, petrolati, ää ℥ss (16 Gm.); leave on one to three hours, according to irritation produced, then wipe off with oil, wash skin with water, and apply a bland ointment. Discontinue paste when skin begins to peel. *Hailperin.* 609

Actinomycosis. TREATMENT. X-ray treatment recommended in cases resisting customary iodide medication and recurring after operative intervention. *Levy.* 472

Adenitis, Tuberculous. TREATMENT. 1. Produce Bier hyperemia by applying elastic band about neck for a few hours before opening abscess. 2. Make very small straight incision into gland, evacuate contents with dull spoon, using no force, and, without washing or wiping out cavity, introduce a 2 to 4 per cent. solution of formaldehyde in glycerin, and seal incision. Primary healing results in 50 per cent. of cases; others are treated by further injections. 3. In cases of extensive involvement, prescribe enzymes of yeast internally. 4. In the few cases that do not respond satisfactorily, resort to radical operation. *Brown.* 303

Albuminuria. TREATMENT. Prophylactic doses of Roux's antidiphtheritic serum in 128 cases of scarlet fever found to lower greatly frequency of albuminuria in these cases. Anaphylactic effects extremely rare with this serum. In all cases of albuminuria originating from throat inflammation, as well as in albuminuria in general where other measures have proven ineffective, the serum should be given hypodermically in doses of 10 c.c. (2½ drams) every three or four days. *Galliot.* 36

Anal Fissure. TREATMENT. Conservative measures advocated in painful fissure. In examining for it have patient bear down, or blow in some orthoform. In treatment: 1. Apply thigenol on cotton on end of probe, which is then withdrawn, leaving cotton in position. 2. Patient to drink tumblerful of hot water an hour before breakfast, and another, either hot or cold, in evening. 3. To insure softness of motions: Tincture of cochineal and peppermint oil, of each, ♏x (0.6 c.c.); syrup of glycerin, ʒj (4 c.c.); soft paraffin, ℥j (31 Gm.). If this objectionable, add 20 grains (1.3 Gm.) of powdered cocoa, or 10 to 20 grains of powdered agar. Dose of the mixture, 1 teaspoonful four times daily. 4. Where constipation previously present: Some aperient, such as confection of senna, ʒss-j (2-4 c.c.), to be given in addition. 5. After bowels act: Patient to wash parts and apply some bland ointment, *e.g.*, one of eucalyptus. 6. Where violent sphincteric spasm and pain, dilate under gas, and, if sentinel pile present, remove with forceps. *Baldwin.* 109

Anemia. TREATMENT. Administration of olive oil and glycerin, equal parts, in gradually increasing doses two hours after each meal considered a valuable measure. *Bram.* 47

Appendicitis, Acute. TREATMENT. After operation in children: 1. Give warm saline solution by rectum, 8 to 10 ounces every two or four hours; administer slowly with catheter and funnel. 2. Feed with a decoction of crushed raisins, alternated with albumin water. 3. Open bowels as soon as possible. If no normal movement within twenty-four hours, give glycerin enema; use syrup of senna as routine aperient. *Stiven.* 37

Appendicitis, Chronic. DIAGNOSIS. In cases of chronic appendicitis with digestive symptoms, induction of referred pain or distress in the epigastrium, left hypochondrium, umbilical, left inguinal, or precordial region by a continuous firm pressure over the appendix (McBurney's point) is a valuable test in deciding when and when not to recommend operation. *Aaron.* 283

Ascertain lower, outer and inner borders of cecum, usually distended with gas, by percussion; estimate, from this, position of appendix, and find out whether there is tenderness at that point. Where mapping out cecum by percussion not possible, place

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thumb at junction of right edge of rectus muscle and umbilicospinal line and, with it pointing toward ensiform, sink it in about halfway to back of abdominal cavity; next swing it to right of patient at right angle to line of previous pressure, thus pinching appendix against unyielding structures and eliciting tenderness if it be diseased. If this test negative, repeat ½ inch lower and test again, until brim of pelvis almost reached. Control by pressure on left side. *Bassler.* Page 545

Arthritis, Chronic. TREATMENT. Certain joint cases, rebellious to all other treatment, can be arrested by proper diet combined with colonic lavage. Breakfast: Cereal, small amount; toast with butter; imitation cereal coffee. Between breakfast and lunch: Buttermilk, 2 glasses; water, 1 glass. Lunch: Clear soup (or lettuce or spinach); 1 roast potato; 2 slices toast; imitation coffee. Between lunch and dnner: Buttermilk, 1 glass; water, 1 glass. Dinner: Clear soup (or twice a week small amount roast chicken, or 1 egg); toast or lettuce; imitation coffee; apple sauce. Between dinner and bedtime: Buttermilk and water. Daily simple enema followed by high colonic lavage with about 1½ quarts normal saline solution, until washings return fairly clear. Adapt diet to individual caloric needs and with constant regard to weight. *Pemberton.* 45

Arthritis, Gonorrheal. TREATMENT. A. Acute. 1. Sodium salicylate, 1 to 4 drams (4 to 6 Gm.) or acetyl salicylic acid, 20 to 30 or 40 grains (1.3 to 2.6 Gm.), freely diluted, during febrile stage. 2. Where intolerable pain and insomnia or threatening rupture of synovial membrane or subluxation, puncture, repeated if necessary, and active counterirritation. 3. In suppurative and grave forms, arthrotomy, either simple or followed by iodine or zinc chloride. 4. Passive movements and massage, when acute symptoms subsided. Other available measures: 5. Antigonococcic vaccines. 6. Antimeningococcic serum. 7. Autoserotherapy. 8. X-rays or radium in obstinate cases. 9. Bier's hyperemia. 10. Hot-air treatment especially; air in hot-air-box at 175° to 210° F., for one-half to one hour at a time. B. Chronic. Additional special measures: 1. Disinfection of genitourinary tract. 2. Thyroid substance, 2-grain (0.12 Gm.) cachets one to three times daily. 3. Fibrolysin injections, 30 minims (2 c.c.) daily for a fortnight, where joint deformity present. *Dardel.* 236

Arthritis, Rheumatoid. TREATMENT. Atophan found most efficient drug in relieving pain in a case of rheumatoid arthritis. *Kahlo.* 350

Asthma, Bronchial. TREATMENT. 1. When patient first seen during an attack, give 10 grains (0.6 Gm.) of blue mass or an equivalent amount of calomel with soda, followed by salts next morning. 2. Morphine and atropine injection, only if patient suffering intensely. 3. Sodium iodate, gr. iv-v (0.25-0.3 Gm.) every four to six hours, in capsules, given with food (contraindicated in the tuberculous, especially if hemoptysis). 4. Repeat mercurial purge if attack not markedly better in twenty-four hours. 5. Diet. During attacks: Broths every two to four hours. In intervals between attacks: Enough plain, coarse food to satisfy hunger and no more. Soups, clear of fat; fresh fish; raw oysters or clams; tender and lean meats; all vegetables except onions, cabbage, cucumbers, corn on cob; potatoes, peas, and beans only sparingly; only well-baked or toasted bread; rice, cereals, and eggs in moderation; no raw fruits; pastry, sweets, and any articles found by experience to disagree to be avoided. Careful scrutiny of patient's selection of foods required. Heaviest meal to be taken at noon; light supper. *Oettinger.* 37

Theobromine sodium salicylate (diuretin) found to do good in many cases. Often it is sufficient to give 15 to 30 grains (1 to 2 Gm.) before time of expected paroxysm. The product can be taken for weeks without harm. *Meyer and Cahn.* 179

Inhalation of 1:1000 epinephrin solution in a special very fine spray from small atomizer advised for arrest of a paroxysm by patient at any time. In established severe attacks, following combination recommended: Epinephrin solution, 9 c.c.; atropine sulphate, 0.01 Gm.; cocaine hydrochloride, 0.025 Gm.; distilled water, 1 c.c. *Staübli.* 284

Combined injections of 0.0008 Gm. (1/80 grain) of epinephrin and 0.04 Gm. (⅔ grain) of pituitary extract in 1 c.c. (16 minims) of water used with marked success in arresting paroxysms in 300 cases. More effectual than epinephrin alone. Second injection required in only 10 instances. *Weiss.* 296

In about 300 cases of asthma examined at the Mayo clinic, over 90 per cent. showed the principal etiologic lesions in the upper respiratory tract, chronic suppuration or retention of mucoid secretions in the nose or accessory sinuses occurring in the majority. Relief was parallel with the degree of success obtained in securing free and continuous drainage, little attention being paid to reflex factors. *Matthews.* 663

Blepharitis. TREATMENT. Hydrogen peroxide solution recommended for removing the crusts. *Harry.* 612

Bronchitis, Chronic. TREATMENT. Frequent small doses of salines, with 1/100 grain (0.0006 Gm.) of nitroglycerin 3 or 4 times daily, recommended for bronchitis with chronic pulmonary congestion, usually indicated by accentuation of pulmonic second sound. Following formula employed with success in chronic bronchitis: Ammonii chloridi, pancreatini, āā ʒij (8 Gm.); spiritus ammoniæ aromatici, tincturæ nucis vomicæ, āā fʒiv (15 c.c.); spiritus glycerylis nitratis, ɱxxv (1.5 c.c.); elixiris calisayæ, q. s. ad fʒiij (90 c.c.). Teaspoonful in water 3 or 4

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times daily. Ammonium carbonate, 5 grains (0.3 Gm.) to a dose, will greatly increase expectorant power of the combination. Profuse liquid secretions may require belladonna, usually with strychnine. In some cases the following is useful: Olei caryophylli, spiritus ammoniæ aromatici, āā f3ij (8 c.c.); misturæ glycyrrhizæ compositæ, q. s. ad f℥iij (90 c.c.). Teaspoonful after meals. For cases with thick and tenacious or purulent sputum, pure creosote, given in ¼ to ½ glassful of very hot water, is most valuable. Where secretions persistently scanty, sandalwood oil and terpinol seem beneficial. In cases with asthma or emphysema, physostigma, ⅛ grain (0.008 Gm.) to the dose, may be added to the regular treatment. *Walsh.* Page 663

Bronchopneumonia. TREATMENT. Creosote carbonate recommended for use in bronchopneumonia and obstinate chronic bronchitis in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first three years; in fifth and sixth years, 20 drops (2 Gm.). *Hunäns.* 162

Buboes. TREATMENT. In venereal buboes and other glandular abscesses, phlegmons, and periostitis, following treatment advocated: (1) Paint with iodine tincture; (2) ethyl chloride anesthesia; (3) stab incision 5 mm. long; (4) evacuate pus as completely as possible; (5) wash out with hydrogen dioxide solution until returns clear; (6) fill cavity with ointment of vioform, 1 part, in 4 parts of neutral sterilized petrolatum, previously heated on water bath to 45-60° C.; (7) seal opening with gauze and collodion, to be removed only four or five days later, or, where impossible to evacuate pus cavity completely, cover opening with vioform gauze; next day, walls of abscess losing sensitiveness, thorough evacuation can be effected. *Gabriel.* 678

Burns. TREATMENT. Where patient shocked and cannot stand anesthesia, use dressings of saturated picric acid solution for two days. Then clean up burns under chloroform general anesthesia with 70 per cent. alcohol, rubbing vigorously, and dress with same, on gauze, covered by dry gauze, cotton, and bandage. Dress daily in same way under anesthesia for eight days; then apply boroglyceride gauze dressings, when healing will rapidly follow. In burns involving whole skin, cut off sloughs with scalpel, without waiting for separation. To avoid excessive alcohol absorption, one may interpose boroglyceride gauze between burn and alcohol gauze. *Milligan.* 410

Following modification of carron oil recommended for second-degree burns: Olei eucalypti, f℥iss (45 c.c.); olei olivæ, f℥xiv (420 c.c.); liquoris calcis, q. s. ad Oij (100 c.c.). Phenol, ¼ to ½ grain (0.015 to 0.03 Gm.), to be added to each ounce of this formula if burn very painful. Following ointment also gives good results: Ichthyolis, ℥j (30 Gm.); thymolis iodidi, ℥ss (2 Gm.); adipis lanæ hydrosi, petrolati, āā q. s. ad ℥ij (60 Gm.). In large third-degree burns one may apply a warm saturated sodium bicarbonate or aluminum acetate solution. For slowly granulating ulcerations, balsam of Peru, 1 dram (4 Gm.) to 1 ounce (30 Gm.) of a 5 to 10 per cent. scarlet-red ointment, applied very thinly at the margins, the surrounding healthy skin being protected with an ointment of boric acid or zinc oxide, is effectual. It is left on twenty-four to thirty-six hours only, and then a bland ointment applied to whole surface for two days, after which scarlet-red is again used. *Levinson.* 601

Carcinoma. TREATMENT. Silicic acid internally, ⅙ to ⅓ grain (0.01 to 0.02 Gm.) daily, advised to prevent recurrence after cancer operations. In cancer of digestive organs, however, not more than a few milligrams should be given daily. *Benedikt.* 242

Carcinoma, Esophageal. TREATMENT. Hydrogen dioxide, 1 dessertspoonful of 1 to 3 per cent. solution every hour, found to be valuable palliative measure where stenosis apparently complete. Within twenty-four hours stenosis is overcome, and later purées and even solid food can be swallowed. Subjective symptoms disappear and patients gain in weight. Measure of little use, however, in scirrhous form of cancer. *Fradiss.* 109

Cardiovascular Disease. TREATMENT. Ideal diet in presence of impaired circulation consists essentially of bread and butter, with some milk to supply fluid, and enough cheese to make up protein requirements; fruits and vegetables to be added in moderate amount. *Bishop.* 108

Reference made to cases with high blood-pressure, hypertrophied heart, without notable thickening of superficial arteries or renal changes of importance. Symptoms usually respiratory or gastric, occasionally vertigo, tinnitus, or peripheral numbness and tingling. Measures advised: 1. Rest, especially mental. 2. Reduction in quantity of food taken, especially of purin-containing articles; small evening meal. 3. Restriction of alcohol, and especially tobacco. 4. Bowels to be kept open with phenolphthalein and rhubarb, or compound licorice powder, and calomel or blue mass occasionally. 5. Nitrites, only to relieve symptoms; where nitroglycerin fails, sodium nitrite, ⅛ to 2 or 3 grains (0.007 to 0.2 Gm.), or erythrol tetranitrate, ½ grain (0.03 Gm.) useful. 6. Sodium iodide, two hours after meals, in water or milk. 7. Digitalis in small doses where dyspnea or even vertigo. 8. Venesection at times very useful and effective. *Riesman.* 288

Case of "bad heart attack," with rapid, irregular, feeble pulse, cyanosis, and dyspnea, but no edema, in a woman of 77, in which life was apparently saved, after failure of other remedies, by administration of cane-sugar in milk and syrup. Four ounces (120 Gm.) given during night, same amount in ensuing twelve hours, and smaller quantities for several weeks after. *Denyer.* 548

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Cholelithiasis. TREATMENT. Radish juice, obtained by grinding up radishes and expressing through cloth, found effective in relieving and preventing recurrence of hepatic colic. Dose, ½ cupful a day, increased to 2 cupfuls, and after two or three weeks diminished gradually to ½ cupful 3 times weekly. Repeat "cure" several times yearly. *Gramme.* Page 602

Chorea. TREATMENT. Twenty-five cases, in children of 8 to 19 years, in which abnormal movements rapidly disappeared after 3 or 4 intravenous injections of 0.2 to 0.35 Gm. of salvarsan, given weekly. Recovery regularly after three or four weeks. General condition also always greatly ameliorated. *Marie and Chatelin.* 38

Conjunctivitis, Purulent. TREATMENT. In gonorrheal and membranous conjunctivitis, hydrogen peroxide gives good results. In former case it should be used as a warm douche (40° C. or 104° F.). Same remedy useful in corneal ulcerations. *Harry.* 612

Constipation. TREATMENT. Stubborn constipation in infants is relieved by giving 1 dram (4 c.c.) of olive oil once or twice daily. Constipation in neurasthenics is also benefited. *Bram.* 47

Cyanide Poisoning. TREATMENT. 1. Give 3 ounces (90 c.c.) of 1:10,000 epinephrin solution by mouth. 2. Give Martin's antidote, made by mixing 8¾ drams (33 c.c.) of 23 per cent. ferrous sulphate solution with 1 ounce (30 c.c.) of 5 per cent. potassium hydrate solution and ½ dram (2 Gm.) of magnesia. 3. Wash out stomach. 4. Give 1⅔ ounces (50 c.c.) of 1: 10,000 epinephrin solution. *Jona.* 553

Diabetes Mellitus. TREATMENT. For first two weeks restrict to careful antidiabetic diet, unless sugar in urine practically disappears in less time. Then cautiously increase carbohydrates, always warning patient of danger of overeating *permissible* articles. Should sugar persist, put to bed and restrict to 1 raw egg and 2 ounces of olive oil 3 or 4 times a day. Continue free use of a mildly alkaline drinking water. If any acidosis symptoms result, decrease amount of oil and give small quantities of carbohydrates. Proper mastication an important detail in treatment. For constipation, use: Olive oil, castor oil, glycerin, of each, 160 parts; gum arabic, 18; flavoring (oil of cassia or gaultheria), 0.5. Best diabetic flour is: Unadulterated soy-bean flour, 350 parts; unground poppy seed, 30; eggs, 250; pure baking powder, 15; water, 340. *Hodgson.* 39

Cultures of lactic acid bacillus given to 13 cases in doses of 4 to 16 c.c. (1 to 4 drams) three times daily. Indican and sugar in urine both markedly reduced. Results probably due not only to removal of putrefaction, but also to partial inhibition of carbohydrate digestion by the bacilli, as indicated by experiments *in vitro*. *Horowitz.* 235

Necessity for individualization in prescription of diet emphasized. Low carbohydrate tolerance does not imply necessity of ingestion of an excess of meat. In all grave cases meats are dangerous. Vegetables are to be preferred, and those should be prescribed which, while containing a high percentage of carbohydrates, are well assimilated in the individual case. Large amounts of fats are often dangerous. *Graul.* 286

Iodine treatment considered indicated in diabetes in elderly persons. Sajodin, 3 tablets of 0.5 Gm. (7½ grains) each, given daily one after meals, found to cause marked reduction of previously obstinate glycosuria and general improvement in 3 cases aged, respectively, 66, 52 and 62 years. *Lorand.* 412

Diarrhea, Infantile. TREATMENT. 1. Where vomiting a prominent symptom: Iodine solution, consisting of 3 minims (0.2 c.c.) of the tincture in 1 ounce (30 c.c.) of water; one small teaspoonful to be given every two hours, before feedings. 2. Calomel, ⅛ grain (0.01 Gm.), with bismuth subcarbonate, 2½ grains (0.15 Gm.). 3. Some carminative mixture, with addition of rum if signs of collapse. 4. Where mucus and blood in stools: Sodium sulphate or phosphate, with a little opium tincture in bad cases. 5. Where persistent vomiting of food or medicine, falling temperature with aggravation of other signs, or exhaustion shown by sinking of eyes and loss of skin elasticity, hypodermoclysis of following solution to be practised: Sodium chloride, 0.9 per cent.; potassium chloride and calcium chloride, of each 0.02 per cent., and sodium bicarbonate, 0.01 per cent. Dose of solution, 25 to 150 c.c. (6 drams to 5 ounces), according to rapidity of absorption, average being 60 c.c. (2 ounces). Large doses to be given two or three times a day where signs of failing circulation. Injections contraindicated where very high fever. *Day.* 473

Tablets of pure culture of *B. lactis bulgaricus* used with unusually good results in 117 cases. Dose, 1 or 2 tablets every two or three hours; in severe cases, 2 or 3 tablets at same intervals before as well as after each feeding. Starvation treatment, even at first, condemned. *Clock.* 610

Diphtheria. TREATMENT. Intravenous administration of antitoxin advised in cases of malignant diphtheria; 5000 units thus given are equivalent to 20,000 subcutaneously. No bad results from intravenous use in nearly 200 cases. Serum to be warmed to blood heat before injecting. In little children one must cut down on the vein. Intramuscular injections are absorbed in one-half the time required by subcutaneous ones. *Park.* 413

Dupuytren's Contraction. TREATMENT. Thyroid substance continuously administered in doses of 0.1 Gm. (1½ grains) found markedly beneficial in 5 cases. *Gilbert.* 173

Eclampsia, Puerperal. TREATMENT. Report of 11 cases in which squeezing out of

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colostrum from breasts, thoroughly carried out, appeared usually beneficial. *Walcher.* Page 286

Following measures among those advised: (1) preliminary injection of ¼ grain (0.015 Gm.) of morphine; (2) colonic irrigations with 4 gallons of normal sugar solution at 115° F. (to be delayed, where marked edema, until after free sweating secured with hot pack); (3) for high-tension pulse, nitroglycerin, 1/100 grain (0.0012 Gm.) every twenty to thirty minutes till tension begins to lessen, then at longer intervals, to be preferred to veratrum viride. *Kosmak.* 604

Eczema. TREATMENT. Involved areas must be cleansed and kept aseptic. Apply 2 per cent. solution of aluminum subacetate and dust with starch powder. For vesicular eczema: Liniments with zinc carbonate or ichthyol. In recurrent cases paint with iodine tincture and cover with zinc oxide paste. Touch up rhagades with 3 to 5 per cent. silver nitrate solution. *Ravogli.* 547

Edema of Extremities. TREATMENT. Where edema of legs resisted all measures, especially where incision not permitted, good results obtained from local use of hypertonic saline solutions—25 to 50 Gm. (¾ to 1½ ounces) of sodium chloride to 1 liter (quart) of distilled water. Soak gauze compresses lightly in this, wrap around legs, and cover with thick layer of absorbent cotton, held in place by bandages. Leave dressing on overnight. Equally good results in edemas due to broken compensation, Bright's disease, etc. *Pathault.* 40

Endocarditis, Chronic. TREATMENT. Three cases stated to have been cured by injections of fibrolysin in conjunction with concussion of the seventh cervical spine to elicit the cardiac reflex of contraction. *Abrams.* 394

Enuresis. TREATMENT. Following measures advised as part of treatment: Meals to be given with absolute regularity, and separated by sufficient intervals for complete digestion and establishment of an appetite. Absolute abstinence from food between meals. Green vegetables to be given to stimulate peristalsis. Diet to be based upon history of particular excesses and a study of bowel movements to determine what particular foods are at fault. Some easily assimilable preparation of iron to be given to combat anemia, but only after normal digestion is re-established. *Van der Bogert.* 666

Epididymitis, Gonorrheal. TREATMENT. Epididymotomy performed in 16 consecutive cases, 1 bilateral. Result: Sudden and permanent relief from pain; defervesence in two days; rapid reduction in swelling; prompt healing; early convalescence without relapse. *Culler.* 348

Epilepsy. TREATMENT. Solution of 1 part of phosphorus in 10 parts of oil used in 9 cases of severe epilepsy, and generally caused pronounced reduction in frequency of attacks. Enterogenous autointoxication to be overcome before phosphorus begun. *Leubuscher.* 348

Epistaxis. TREATMENT. With patient sitting in chair, stand behind him, place index fingers of both hands beneath body of lower jaw on each side, with thumbs resting behind angles, and make gentle traction upward upon head, and simultaneously extend it backward as far as patient can comfortably bear. Sets up artificial anemia in nose and head in general, causing epistaxis to cease. Desist in one or two minutes, or consciousness may be partly or wholly lost. *Ritschl.* 165

Epithelioma. TREATMENT. Good results from spraying ulcer for two minutes with ethyl chloride, surrounding tissue being protected with cotton-wool. Repeat every other day, gradually prolonging spraying until tissues kept white and hard frozen for five to seven minutes. No bad effects. Involved area often heals, with almost invisible scar and no recurrence, and if treatment fails, disease will not have spread but usually been considerably reduced. *Seidelin.* 605

Erysipelas. TREATMENT. Local application of buttermilk on soft rags, latter to be kept constantly wet with it, gave uniformly favorable results. *Arnold.* 479

Eye Injuries. TREATMENT. Following formula used for disinfection of cornea, especially after extraction of foreign bodies: To 2¼ grains (0.15 Gm.) of stovaine, finely pulverized and dissolved in 5 drops of oil, add, after mixing, preferably on a water bath: Hydrated wool-fat, gr. lxxv (5 Gm.), and petrolatum, ʒiiss (10 Gm.). Then add gradually: Iodine, gr. ii¼ (0.15 Gm.); sodium iodide, gr. ivss (0.3 Gm.); water, ♏xxiv (1½ Gm.). *Dewaele.* 237

In simple abrasions of cornea: 1. Irrigate conjunctival sac thoroughly with normal saline or boric acid solution. 2. Drop argyrol in eye. 3. Fill conjunctival sac with a sterile medium consisting of petrolatum, ℥vj (180 Gm.); mercury bichloride, gr. j (0.06 Gm.), and sodium chloride, gr. v (0.3 Gm.). Where cornea already infected and ulcer present, sterilize area with phenol, removing excess with alcohol; or else, touch lightly with platinum probe at red heat. In wounds of cornea: 1. Cleanse eye thoroughly. 2. Cut off any projecting iris. 3. Drop in atropine and argyrol. 4. Fill with sterile petrolatum. In burns of eye: 1. Fill with sterile petrolatum. 2. Move eyeball and lids frequently to prevent adhesions. Where sclera wounded: Draw conjunctiva over wound and stitch together. *White.* 240

Scarlet red, 1 per cent. in petrolatum or petrolatum and lanolin, equal parts, found to promote rapid healing in corneal or conjunctival abrasions, wounds, or burns. A minute portion of the ointment is placed on conjunctival surface of everted lower lid and a pad and bandage applied, once daily or on alternate days. Atropine also to be used, if indicated. *Allan.* 359

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Felon. TREATMENT. Incision (under nitrous oxide) before suppuration begins strongly advised. Make it parallel with and close to nail, in line of skin furrows, thus forming a flap of tip of finger. Insert rubber tissue or gauze with petrolatum in uppermost angle of wound and dress with normal salt solution, maintaining constant moisture. On third day packing comes away and no further packing is necessary, wound soon closing and finger resuming usual size and shape. *Dorrance.* Page 606

Fibroid Phthisis. TREATMENT. Where profuse expectoration of pus, creosote often best remedy. Dose, 3 to 5 drops (0.18 to 0.3 c.c.) three times daily, given over a long period. Creosote carbonate more easily tolerated; dose, 15 to 25 drops (0.9 to 1.5 c.c.) per day. *Fishberg.* 180

Filariasis. TREATMENT. Case of pronounced elephantiasis of lower extremities in which two intravenous injections of 0.6 Gm. of salvarsan caused disappearance of filariæ from blood and great reduction in size of limbs, weight falling from 400 to 244 lbs. *Barnes.* 1

Fistula, Rectal. TREATMENT. Injection of 1 per cent. aqueous formaldehyde solution recommended in all varieties of rectal fistula. Care to be taken that external opening of fistula allows free drainage for a few days. *Roehr.* 479

Fracture of Forearm. TREATMENT. To correct overriding of fragments, attach to hand, anteriorly and posteriorly, as separate straps, zinc oxide adhesive plasters 2½ inches in width, reading from above wrist to 6 inches beyond extended fingers, and fixed above wrist and about knuckles with encircling strips. Apply usual splint dressing and also a plaster-of-Paris encasing bandage, including hand and lower arm. When this firm, include beneath enveloped forearm, by more turns of plaster bandage, a light, flat wooden splint projecting 1 or 2 inches beyond extended fingers. To a cross-piece at end of this, projecting an inch, attach the double adhesive strap from hand with tacks, thus keeping bony fragments from overriding. *Miel.* 165

Fracture of Hip, Intracapsular. TREATMENT. Longitudinal traction alone often unsatisfactory in results. Longitudinal combined with lateral traction, however, or wide abduction in plaster of Paris, usually gives serviceable limb. Former far easier to apply and the more suitable the older the patient. Plaster-cast method requires much skill in application, and is better adapted to young patients. *Davis.* 41

Furuncle. TREATMENT. Following measures advised for early, hard boil on neck: (1) shave around boil with razor free from nicks; (2) bathe thoroughly with benzin followed by alcohol; (3) paint over strong iodine tincture or 3 per cent. alcoholic solution of picric acid; (4) scratch cap of vesicle off with point of knife; (5) effect gentle suction with Bier cup for three minutes, repeating this four hours later; (6) dress with gauze dipped in Wright's solution (sodium citrate, 1 per cent., and sodium chloride, 2 per cent.), covering with waxed paper, cotton compress and muslin bandage; (7) instruct patient to keep gauze wet with the Wright solution; (8) for an intolerably painful boil, infiltrate regional cutaneous nerves with novocaine; (9) incise only where infection has extended from original boil-focus; (10) to prevent recurrence, inject autogenous vaccine every four days, beginning with 100 million and doubling dose each time if reaction warrants it. Occasionally, injecting a very early boil with a few drops of pure phenol will abort it. *Skillern.* 607

Gangrene. TREATMENT. Alternate hot (95° F., gradually raised to 131° F.) and cold (room temperature) baths up to knee used with success in a case of sclerotic gangrene of leg. Pain relieved and normal color regained. Alternate immersions practised 30 to 50 times, morning and evening, for over a year. *Borchardt.* 348

Alternate lowering and raising of leg to horizontal position yields an effect similar to that of hot and cold baths in leg gangrene. *Moszkowicz and Frank.* 348

Gastric Pain. TREATMENT. Following combination recommended: Sodii bicarbonatis, gr. xij (0.75 Gm.); magnesii ponderosi, gr. iv (0.25 Gm.); pulveris belladonnæ foliorum, gr. ⅙ (0.01 Gm.). Where pain in association with gastric motor insufficiency, 2 of above powders should be taken an hour and a half-hour before, and again a half-hour and an hour after, each meal. Where delayed evacuation is due to pyloric spasm produced or kept up by hypersecretion, the powders should be taken during whole digestive process, beginning an hour after meals and continuing at intervals of an hour and a half until next meal. *Binet.* 480.

Gastric Ulcer. TREATMENT. Best preparation of bismuth to use is the subnitrate precipitated from a boiling-hot mixture. Cleanse stomach in morning with 150 c.c. (5 ounces) of Carlsbad or Vichy water, and three-quarter to one hour later give 10 to 20 Gm. (2½ to 5 drams) of bismuth subnitrate suspended in tumblerful of warm water. Administer daily, and increase or reduce dose, or discontinue, more or less rapidly, according to clinical course (Fleiner). Another method is to give same doses of bismuth finely suspended in oil, several times daily. Stepp recommends following bismuth suspension: Bismuthi subnitratis, gr. xlv (3 Gm.); chloroformi, ♏xv (1 c.c.); aquæ destillatæ, 5 fluidounces (150 c.c.); 1 to 2 tablespoonfuls to be taken hourly for several weeks. *Aaron.* 42

1. Absolute rest in bed. 2. No food for five to seven days. 3. Morphine hypodermically, until hemorrhage has ceased. 4. Ice-pack on abdomen, or hot applications in ab-

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sense of hemorrhage. 5. Move bowels by enema, if necessary; where no hemorrhage, give citrate of magnesia or Carlsbad salts. 6. Bismuth subnitrate in 30-grain (2 Gm.) doses, with magnesium hydrogen dioxide (25 per cent.) in 7½-grain (0.5 Gm.) doses three times daily. Give boiled water if necessary to insure retention of these drugs. 7. Rectal alimentation, giving 500 c.c. (1 pint) of 10 per cent. dextrose solution at body temperature every six hours, by Murphy drop method. 8. Return to mouth feeding as soon as possible, according patient's condition, beginning with small doses of albumin water several times daily. *Gompertz.* Page 139

Injections of atropine recommended to quiet pain and diminish pyloric spasm; especially of service in acute cases. Injection of ¼ mgm. (1/256 grain) to be given three times the first day, then 1 mgm. (1/64 grain) given in 2 doses the second day, then 1½ mgm. (1/42 grain) divided in 3 doses daily for ten to twelve days. *Mathieu and Giraud.* 414

Gastrointestinal Disturbance, Infantile. TREATMENT. Where constipation present, with retention of toxic food derivatives and symptoms such as high fever, tympanites, stupor, etc., give a 2-grain (0.12 Gm.) dose of calomel in candy form, followed in an hour or two by large dose of castor oil with ¼ its volume of equal parts of aromatic syrup of rhubarb and port wine. Keep child quiet on back. If doubt whether cathartic can work in time, give hot colon flushes to start intestinal action, or in obstinate cases, following enema: Epsom salt, glycerin, of each, 8 ounces; turpentine, 1 dram, and water, to 2 quarts, given at 110° F.

Subsequent treatment: Diet of toast water or good beef broth alone until temperature nearly normal. Calomel, 1 grain divided, followed by the castor-oil compound, every day and later on alternate days till stools normal. After this, equal parts of aromatic fluidextract of cascara sagrada and glycerin. *Freeburg.* 292

Goiter. TREATMENT. Iodine may have favorable effect in young patients, but not so often after 30. Thymol, phenyl salicylate and iodine apparently indicated as intestinal antiseptics. *Mayo.* 607

Gout. TREATMENT. Atophan used in 48 cases — acute, neuritic, and chronic — with greater relief than had been obtained from other remedies, except in the chronic cases, in which effects were slight. Gouty sore throat and coryza also generally benefited. Dose, 30 to 60 grains (2 to 4 Gm.) a day, in 7½-grain (0.5 Gm.) tablets, 1 or, in severe cases, 2 after each meal and at bedtime, or every two or three hours. *Kahlo.* 350

Headache. TREATMENT. Migraine and other forms of severe headache relieved by causing copious flow of nasal secretions, thus removing congestion of dura and pia. Formulæ used: I. Mentholis, gr. viiss (0.5 Gm.); acidi borici, gr. xv (1 Gm.); iridis florentinæ, saccari lactis, of each, 3ss (2 Gm.). II. Pulveris mayoranæ, iridis florentinæ, of each, gr. xv (1 Gm.); sacchari lactis, 3ss (2 Gm.); veratri (albi), gr. ii¼ (0.14 Gm.). *Lorand.* 237

Treatment of "indurative" variety considered. 1. Saline purge. 2. Rest in bed. 3. Affected muscles to be kept at rest. 4. Free diaphoresis at outset of attack. 5. Hot fomentations or bags *loco dolenti* for several hours. 6. Salicylates in full doses often effective in acute cases. 7. Colchicum and alkalies, if patient gouty. 8. Applications of chloral, menthol, and camphor rubbed together, locally. 9. Massage. 10. Vibration, except where arteriosclerosis. 11. Rhythmically reversed electric current. 12. In chronic cases with marked fibrosis: Potassium iodide and general tonics, or ionization with 2 per cent. sodium salicylate or lithium iodide solution. *Beling.* 291

Hemoptysis. TREATMENT. Subcutaneous injection of 40 c.c. of sterile gelatin solution recommended. Causes in twenty-four hours rise in viscosity of blood by 1.4 of original value. *Cmunt.* 110

To prevent onset of hemoptysis where sense of tightness in chest or sputum blood-streaked: 1. Absolute rest. 2. Nitroglycerin solution, ♏xv (1 c.c.), or sodium nitrite, gr. xv (1 Gm.), in ℥ij (60 c.c.) of water; ℥j (4 c.c.) every four hours for two or three days.—Where actual hemorrhage: 1. Put to bed in comfortable position. 2. Reassure patient. 3. Amyl nitrite inhalation. 4. Atropine, gr. 1/60 (0.0012 Gm.) hypodermically, to be repeated 2 or 3 times in next twenty-four hours. 5. Or, nitroglycerin, gr. 1/100 (0.0006 Gm.) hypodermically, at first every half-hour for 3 or 4 doses, later less often; followed by sodium nitrite, gr. j (0.06 Gm.) every three or four hours. 6. Where excessive nervous irritability, or cough troublesome: Morphine. 7. In abundant hemorrhages: Apply bandages to middle of arms and thighs. 8. Epinephrin hydrochloride, 5 drops of 1:1000 solution, or suprarenal substance, 3 grains (0.18 Gm.), every three or four hours; or pituitary extract, injected subcutaneously. *Fraser.* 111

Subcutaneous injection in flank or thigh of 0.04 Gm. (⅝ grain) of emetine hydrochloride, dissolved in 1 c.c. (16 minims) of water, gave striking results in 20 cases. Bleeding was constantly and immediately arrested. No unfavorable accompanying effect. Repeat in twelve hours, again next day, and if necessary subsequently, to make sure of preventing recurrence. *Flandin.* 669

Gratifying results from intravenous saline infusion in 50 cases; 5 c.c. (80 minims) of a 10 or 15 per cent. solution of sodium chloride used. Causes no pain and is entirely innocuous. Where bleeding slight or moderate in the predominantly fibrotic form of lung tuberculosis it is always arrested. In 21 cases of the 50 tendency to hemorrhage was permanently overcome. Second and sometimes a third in-

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jection given on same day as prophylactic against return of bleeding. *Müller.* Page 670

Hemorrhage. TREATMENT. In operations where bleeding from bone troublesome, cut a fragment of muscle from any convenient place in operative field and apply to bleeding bony surface or edge. Rub in if it will not adhere at first. Always efficient in arresting the bleeding. *Vaughan.* 290

Thermocautery employed with success in 2 cases of hemophilia to arrest hemorrhage that had proven rebellious to pressure, epinephrin, gelatin, etc. *Hahn.* 416

Intravenous injection of 200 c.c. of a 5 per cent. solution of glucose recommended to arrest severe bleeding where direct surgical methods not practicable. In abundant hemorrhage in tyohoid fever even a 20 per cent. solution may be used to advantage. Repeat as often as required. In hemophilia one may inject 200 c.c. of a 10 per cent. solution with good results. Instead of glucose, cane-sugar may be used. *Schreiber.* 670

Hemorrhage, Gastrointestinal. TREATMENT. Where only occult blood: Rest in bed, on diet of 3 or 4 liters (quarts) of milk, with Carlsbad water, until no blood detected for three or four days. Where liver or spleen enlarged and Wassermann positive: Specific treatment. For severe hemorrhage from any cause: (1) Diet limited to cold tea, ice-cold milk or egg-white jelly, taken regularly in very small amounts. (2) Saline enteroclysis by drop method, 1 liter each day, with 15 drops of 1: 1000 epinephrin solution added. (3) Ice-bag. (4) Gelatin in severe cases. (5) Rectal injections of calcium chloride. (6) Gastric lavage with ice-water, where clots palpable in stomach. *Boas.* 351

Hemorrhoids. TREATMENT. Olive oil a good demulcent laxative in hemorrhoids and anal fissure. *Bram.* 47

Where not much inflammation or hemorrhage, following ointment advisable: Cerati, olei amygdalæ expressi, zinci oxidi, of each ʒiiss (10 Gm.); balsami Peruviani, gtt. iij. Piece of this of size of hazelnut to be introduced high up through anus morning and evening, and especially before stool. Where much hemorrhage, following may be used: Chrysarobini, gr. xij (0.8 Gm.); iodoformi, gr. v (0.3 Gm.); extracti belladonnæ fol., gr. x (0.6 Gm.); petrolati, ʒj (30 Gm.). Hot water or antipyrin in powder or 2 per cent. solution equally effective and less irritating. Where intense itching: Aluminis, gr. xv (1 Gm.); camphoræ, gr. xij (0.75 Gm.); adipis benzoinati, ʒj (30 Gm.). Where much moisture and also itching, 10 per cent. bismuth subsalicylate powder useful. If much congestion, use: Bismuthi subsalicylatis, zinci oxidi, of each gr. lxxv (5 Gm.); talci, ʒiij (90 Gm.). In voluminous, readily prolapsing or bleeding hemorrhoids, an injection of olive oil should be taken every evening before retiring. *Plicque.* 166

Rectal injections of pure crystallized calcium chloride strongly recommended for hemorrhage due to hemorrhoids. *Boas.* 351

Injection method used in about 450 cases with good results. Solution employed: Phenolis, 3j (4 Gm.); glycerini, q.s.; aquæ, q.s. ad 3x (40 c.c.). Phenol and water to be first mixed, then glycerin added drop by drop, stirring. About 50 per cent. of all cases could be safely treated and cured by injections. Clamp and cautery to be preferred, however, where patient not opposed to operation and there is no contraindication. Cases especially suited for injection method: (1) the markedly anemic; (2) tuberculous subjects; (3) where organic disease contraindicates anesthesia, particularly if subjects highly nervous; (4) bleeders. Not over 10 minims of the 10 per cent. phenol solution to be used at one sitting. No superficial necrosis, abscesses or thrombosis in author's cases. *Humphreys.* 351

Hepatic Cirrhosis. TREATMENT. Four cases improved or apparently cured by limited milk diet (6 glasses), medical treatment, including administration of hexamethylenamine, and insurance of regular bowel movements. Alcohol to be forbidden. After improvement, milk to be increased to 8 glassfuls, and later fruit allowed. Milk or almost exclusive milk diet to be continued for at least two months, and followed by light diet of simple foods. *N. S. Davis, Jr.* 548

Hyperchlorhydria. TREATMENT. Where patient constipated at beginning of treatment, give suspension of magnesia and bismuth just after and again one and a half hours after meals; each dose to represent 6 grains (0.4 Gm.) of magnesium hydroxide and 22 grains (1.5 Gm.) of bismuth subnitrate. Continue for three to five days, and, if evacuations still too frequent, use instead a powder containing equal *volumes* of magnesium oxide and magnesium carbonate, with a little powdered charcoal and sometimes bismuth. Less magnesium oxide should always be prescribed than is capable of neutralizing completely all the acid present. *Tupper.* 167

On a diet as nearly salt-free as possible without special preparation of foods before they reach the cook, hyperchlorhydria almost invariably abates. *Benediot.* 354

Sodium cholate, 0.2 Gm. (3 grains), in an emulsion in an equal amount of oil and enclosed in a gelatin capsule—or cholic acid, 0.1 Gm. (1½ grains)—used in 33 cases of hyperacidity, including many with gastric ulcer. Considerable benefit often noted, and in some, complete cure of hyperacidity and attendant gastric disturbances. *Glässner.* 669

Ileocolitis, Infantile. TREATMENT. In "putrefactive diarrhea" of infants, all irritating food should be avoided as, by causing increased mucous flow, it favors bacterial pullulation. Use of proteid of cows' milk, obtained by removing whey from skimmed milk with chymogen or pepsin, advisable. Break up curd into fine particles and suspend in 5 per cent. gelatin water, to be heated before ad-

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ministration. After four or five days to a week replace gelatin water partly by buttermilk, and skimmed-milk curds by whole-milk curds, gradually getting child on albumin-milk and finally on whole-milk mixture. *Grulee.* Page 168

Impetigo Contagiosa. TREATMENT. Remove all crusts, wash raw surfaces with bichloride solution, make a fresh paste by adding a few drops of mercury bichloride and ammonium chloride solution (1:2000) to small quantity of zinc oxide, and apply to irritated places twice daily. *Hiden.* 182

Infections, Pyogenic. TREATMENT. Dilute sulphuric acid in 20- or 30- minim (1.25-2.0 c.c.) doses, diluted with 2 oz. (60 c.c.) of water, every four hours, found very useful in treatment of carbuncles, boils, and other local pyogenic infections. Rapid circumscription and granulation of affected area follows. Dressing of 1:20 carbolized petrolatum used externally. Same measure found useful in early sepsis, inflamed lymphatics, blind boils, recurrent pimples and acne. In bronchiectasis and phthisis sputum becomes less purulent and less in amount. *Reynolds and Reynolds.* 284

Influenza. TREATMENT. Care to secure proper ventilation, alimentation, and elimination necessary. Local treatment of air passages important, to destroy causative bacillus. In the morning: 1. Cleanse nose and throat with spray of Dobell's solution or 1:400 phenol solution at 85° to 90° F. 2. Swab with: Balsam of Peru, gr. x (0.6 Gm.); ichthyol, gr. v (0.3 Gm.); glycerin, q. s. ad f℥ij (60 c.c.). In the evening: 1. Repeat spray. 2. Have patient inhale for one-half hour creosote, 8 c.c. to quart of water. 3. Swab nose and throat with epinephrin solution. 4. Fifteen minutes later swab with argyrol, 10 per cent. Hydrotherapy of value in chronic cases. In severe chronic cases, sojourn in an even and sunshiny, but not tropical or subtropical, climate desirable. *Jones.* 111

Intussusception. DIAGNOSIS. With a history of sudden onset of screaming, intractable vomiting, continuous pain and blood and mucus in the stool, and with absence of fecal matter in the stool, diagnosis of intussusception, particularly in infants under a year, can be safely made. Do not wait for a sausage-shaped tumor or for gut to appear in the rectum. With early diagnosis there is no prostration, and this is ideal time for operation. In doubtful cases, X-rays are of diagnostic utility. *Kahn.* 671

Inversion of Uterus. TREATMENT. To arrest hemorrhage, place elastic band around base of uterus in vagina just tightly enough to check flow of blood, but no more; take off band when bleeding stopped. Where inversion incomplete, tampon vagina, and perhaps also suture vulva together. Reduction of uterus not to be attempted until shock recovered from; otherwise, mortality considerable and reduction frequently fails. Reduction to be done under general anesthesia, with pelvis elevated. Operator to exert pressure near orifice of one tube with tips of fingers, using rest of hand for counter-pressure. *Zangemeister.* 354

Iritis. TREATMENT. Sinus infection considered responsible for many cases of intra-ocular inflammation. Following treatment used with good results in 26 cases of iritis and 5 of idiopathic retinochoroiditis: Saturate tampon, of such size as to fit snugly between middle turbinate and septum and extend from exterior portion of nose to sinus posteriorly, with aqueous argyrol solution (gr. xl-℥j) and introduce. This will drain ethmoid and other sinuses. To drain antrum, place tampons under scroll of middle turbinate and above upper part of inferior turbinate. Allow to remain twenty minutes to one hour. *Manning.* 112

Lead Poisoning. TREATMENT. Obstinate lead colic relieved and constipation overcome by giving a tumblerful of olive oil once daily. *Bram.* 47

Leukemia. TREATMENT. Benzol (benzene) used in 6 cases of myeloid leukemia and 1 of Hodgkin's disease with good results. Given in capsules each containing 0.5 Gm. (8 minims), with same amount of olive oil; at first, 4 capsules daily, after meals, then 2 capsules 3 times daily, later 4 times, and finally 5 times. Leucocyte count gradually lowered to normal, fever disappears, and general condition improved. Effectual where other measures, including X-rays, have failed. *Kiralyfi.* 114

Benzol in doses of 7 minims (0.5 c.c.), increased to 15 minims (1 c.c.), in capsules, after meals and at bedtime, given in 5 cases—4 myelogenous and 1 lymphoid. Results: Rapid fall in leucocytes, resulting in leucopenia in 3 cases; diminution in size of spleen; improved red cell count and hemoglobin; disappearance of lymph-nodes in lymphoid case; improved general condition. Use of drug should be controlled by frequent blood examinations. *Billings.* 293

Malaria. TREATMENT. (1) Calomel, 3 to 5 grains (0.2 to 0.3 Gm.), followed in twelve hours by 2 ounces (60 c.c.) of 50 per cent. magnesium sulphate solution. (2) Quinine sulphate, 20 grains (1.25 Gm.) in 4 drams (16 c.c.) of distilled water with 4 drops of concentrated hydrochloric acid. (3) Quinine sulphate, 15 grains (1 Gm.), prepared as before, three times daily for a week, after which dose reduced to 30 grains (2 Gm.) daily for ten days. (4) When vomiting present, quinine bihydrochloride, 22½ grains (1.5 Gm.), given in 5 drams (20 c.c.) of normal salt solution as deep subcutaneous injection. (5) In obstinate relapsing cases, quinine injections of 15 to 30 grains (1 to 2 Gm.) in 300 to 500 c.c. (10 to 16 ounces) of normal saline, given intravenously on two succeeding days, then 45 grains (3 Gm.) a day by mouth. (6) Arsenic, iron and strychnine as tonics. *James.* 610

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Huxham's tincture of cinchona, 1 dram (4 c.c.) every two hours, diluted, will often cure cases of malarial relapse in which quinine is inert. *Beverley Robinson.* Page 672

Marasmus. TREATMENT. Large series of infants with marasmus, congenital or acquired, and premature infants, treated with marked success by external application of codliver oil. Wrap child in oil-soaked flannel from armpits to iliac crests, and cover with oiled silk. Remove flannel, wash skin with soap and water, and reapply flannel, at twelve-hour intervals. Give only water by mouth, in ample quantity. Treatment causes rise in temperature, loss of dryness and wrinkles of skin, and an increase in weight, often considerable. Feed by mouth only when temperature has been normal for a number of days and skin shows increase in fat and water content. *Gray.* 114

Measles. TREATMENT. Following measures employed in 160 cases: (1) hot bath, followed by (2) application of eucalyptus oil to whole body except hands and part of face about mouth, nose, and eyes; (3) mouth irrigated twice daily with weak alum lotion, and glycerin and borax applied to interior of mouth and gums; (4) tonsils and fauces treated with 1: 10 phenol morning and evening, using firm cotton mop on end of forceps; (5) blanket-bath given morning and evening for four successive days, followed by general oil rubbing. Treatment reduced mortality and had favorable influence on course of disease. Careful nursing and maintenance of an even air temperature of 65° F. important accessory measures. *Connolly.* 239

Mumps. PROPHYLAXIS. Application every morning of pure tincture of iodine to the pharynx and buccal mucous membrane, with special attention to gingival fold and opening of Steno's duct, recommended for this purpose from experience in military barracks. Tablet of potassium chlorate also to be kept constantly in the mouth. *Petrilli.* 673

Nephritis, Acute. TREATMENT. Saline proctoclysis advised in acute nephritis in children. Tends to relieve edema and subjective symptoms and improve condition of urine. Normal salt solution, kept at about 110° F. by hot-water bottles surrounding graduated container, passed into rectum through soft-rubber catheter, which is inserted about 6 to 8 inches after a cleansing enema. Procedure also useful in acute infectious diseases and toxemic diseases, as well as before and after ether anesthesia. *Lowenburg.* 171

Renal decapsulation practised after appearance of anuria in 2 cases of nephritis due to acute mercurial intoxication. Both cases ultimately died, but not from anuria, urinary function having been resumed. *Tisserand.* 295

Nephritis, Chronic. TREATMENT. Following treatment advised: (1) Exercise to be allowed unless hematuria occurs,—avoiding overexertion. (2) Frequent long vacations. (3) Diet: Limit proteids to amount that will maintain bodily strength (80 to 100 Gm., a third at most in the form of meat, *i.e.*, 130 to 160 Gm. of meat weighed raw); preserved meats, except mild ham, to be forbidden; rest of proteids to consist of milk, eggs and vegetable albumins; amount of fat and carbohydrates to depend upon general nutrition, and should cause neither undue gain nor loss of weight. (4) Salt intake to be restricted in so far as it does not interfere with palatability of food; to be prohibited only where edema. (5) Restriction of fluid to 1¼ to 1½ liters a day, except one day weekly, on which amount is raised to 2½ liters. In "secondarily contracted kidney" about 2 liters should be allowed daily. (6) Carefully prescribed gymnastics for the heart. (7) Baths and massage; especially, lukewarm baths followed by cold douches and vigorous rubbing, in alternation with electric or carbon dioxide baths. (8) Diuretin, 7½ grains (0.5 Gm.) three times a day for a month, every third or fourth month. (9) Warm, dry climate, with avoidance of considerable altitudes. *Von Noorden.* 357

Neuralgia. TREATMENT. Application of X-rays to corresponding nerve-roots give good results in sciatica as well as brachial or trigeminal neuralgia or neuritis, provided the condition be due to a true radiculitis or a lesion compressing the nerve-roots, and not to peripheral involvement. *Zimmern, Cottenot, and Dariaux.* 612

Neuritis. TREATMENT. Place long electrodes consisting of absorbent cotton wrapped in gauze, parallel in pairs along limbs or spinal column. Current to be transmitted through metallic bands of suitable length. Intensity of current 60 to 80 milliampères for an arm and 100 to 125 for a lower limb. Sitting to last three-quarters to one hour, and be frequently repeated. Method used in nearly 600 cases, with excellent results. Traumatic myelitis benefited. *Hirtz.* 420

Ophthalmia, Gonorrheal. TREATMENT. Stock gonococcic vaccines used in 9 cases, causing prompt reduction of swelling and protecting deeper corneal and conjunctival tissues from invasion. Initial dose for babies, 50 millions; subsequently 100 millions. For adults, double these doses. Local cleanliness and antisepsis to be simultaneously maintained. *Mittendorf.* 349

Otitis Media. TREATMENT. Where discharge copious, syringe ear gently but thoroughly 2 or 3 times daily with saturated boric acid solution, or, better, mercury bichloride solution, 1: 8000, sometimes later 1: 4000. Where discharge scanty, first cleanse ear with cotton mop, or if acute stage of attack passed drive out discharge by Valsalva method or Politzer bag and wipe out again. Then have patient incline head and pour in bichloride solution, allow to remain ten minutes, dry ear, not very thoroughly, and plug meatus with absorbent cotton. Do this not oftener than once daily.

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Exceptionally, especially where there is extensive destruction of drumhead, insufflation of boric acid, or of boric acid and aristol or zinc oxide, equal parts, proves more efficacious than the mercury solution. *Theobald.* Page 116

In long-standing cases of chronic catarrhal otitis media that have resisted usual measures, cocainize parts, insert fine catheter into middle ear, and with syringe inject through it 5 to 10 minims of 10 per cent. argyrol solution. Causes inflammatory reaction and pain for forty-eight hours, but hearing is markedly improved. *Hays.* 296

Following measures advised in chronic otitis media: 1. Restricted diet, mainly of vegetables, fruit and buttermilk; prohibition of red meats and pastries. 2. Calomel, 5 or 10 grains, followed in six or eight hours by 1 ounce of castor oil, and this, in three or four hours, by ½ oz. of magnesium sulphate and 1 dram of sodium bicarbonate in 6 ozs. of carbonated water. Magnesium sulphate, 1 dram, daily before breakfast for from two to four weeks. 3. Sodium or strontium iodide, 1 to 5 grains; sodium or strontium salicylate, 5 to 10 grains, and tincture of nux vomica, well diluted, 3 times daily after meals. 4. Removal of nasopharyngeal and faucial abnormalities. 5. Alkaline wash used with nasal cup two or three times daily to keep nasopharynx clean. 6. Vibratory massage over subglenoid fossa, with gentle inflation of middle ear with vapor of chloroform, iodine or menthol, two or three times a week. 7. Where membrane relaxed and flabby: Paint posterior inferior quadrant with tincture of iodine (25 per cent.) once or twice a week, or with flexible collodion. 8. Small doses of thyroid extract. 9. Thiosinamine in cases with well-defined adhesions. *Stucky.* 297

In acute otitis media, otitis externa, myringitis, and furuncle of auditory canal, mixture containing 5 per cent. each of phenol and ichthyol in glycerin found very efficacious. *Nelson.* 488

Pancreatitis, Subacute. TREATMENT. 1. Rest. 2. Limitation of diet. 3. After acute attack of pain has passed off, cholecystostomy. *Archibald and Mullally.* 360

Paralysis, General. TREATMENT. Hexamethylenamine, gr. x (0.6 Gm.) thrice daily, found effectual in preventing retention of urine and avoiding necessity for catheterization. *Baird.* 242

Pediculosis Capitis. TREATMENT. Lay patient on back on bed with head over edge, hair lying in a basin beneath head on a chair. Pour 1:40 phenol solution over hair into basin and sluice backward and forward until hair thoroughly soaked, especially over ears and at nape of neck. Continue sluicing ten minutes, then lift hair from basin and allow to drain, without drying it. Then swathe head with thick towel or large piece of flannel and allow to remain for an hour. Finally wash hair or simply allow to dry. Method entirely safe with children of 5 years and over. Hair not damaged. *Whitfield.* 173

Pellagra. TREATMENT. Gelsemium followed by much improvement in 5 cases. Fluidextract, 3 or 4 drops every four hours, given. Discontinue drug if ptosis or diplopia occurs. *Blosser.* 174

For diarrhea in pellagra: (1) Administer hot colon irrigations, followed by five- to ten-minute cold sitz baths, two to four times daily; (2) encircling abdomen with thick towel saturated with cold water; (3) copious water drinking. For itching of skin: Cool or cold saline bath made by addition of sodium chloride, 7 pounds; magnesium chloride, 1 pound, and magnesium sulphate, ½ pound, to 30 gallons of water. For burning hands and feet: (1) ice-cold compresses applied at frequent intervals; (2) baths in hot mustard water; (3) hot leg and arm packs; (4) revulsive compresses to spine, applied three to five minutes when hot and thirty seconds when cold; give 3 such treatments daily, each lasting thirty minutes. *Niles.* 613

Pelvic Inflammation, Chronic. TREATMENT. Following procedure of massage used with good results in chronic perimetritis with adhesions, chronic parametritis, shortening of uterosacral ligaments with uterine retrodisplacement, and old pelvic exudates: steady and slightly lift up cervix with index and middle fingers of left hand, and with right hand, by rotary movements, massage uterus through abdominal wall, slowly, and only 10 to 15 times at the first treatment. If no unusual pain or soreness follows, repeat three times weekly until symptoms relieved. Where uterus retroverted, place inside fingers against anterior portion of cervix and push posteriorly, at same time bringing uterus forward with outside hand. *McMorrow.* 421

Pemphigus. TREATMENT. Case of refractory pemphigus in which intravenous injection of blood from patient's husband, without previous defibrination, was followed by complete recovery. *Praetorius.* 422

Placenta Prævia. TREATMENT. Pituitrin used with good results in 16 cases. If only a small portion of placenta presents, and especially if vertex presents and cervix is sufficiently dilated, membranes should be ruptured and pituitrin given. In other cases employ combined version with pituitrin, and await spontaneous delivery, merely extracting arms and head. Where dilatation insufficient for combined version, insert small dilating bag or vaginal tampon, and later do version and give pituitrin. *Trapl.* 423

Pleurisy. TREATMENT. Autoserotherapy advised in all cases of pleural effusion where fluid not purulent. Upon exploratory puncture, do not withdraw needle entirely, but inject 2 to 5 c.c. of the fluid when its point is in subcutaneous tissue. In favorable cases, general amelioration in two or three days; in about 80 per cent. of cases fluid will disappear in a week or ten days. In some pa-

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tients treatment may have to be repeated several times every two or three days before benefit appears. *Fishberg.* Page 425

Pneumonia. TREATMENT. Phosphorus given with good results in both lobar and bronchial forms. Very low mortality in several hundred cases. Following formula generally used: Tincturæ phosphori (1: 1000), ℥ss-j (2-4 c.c.); liquoris ammonii acetatis, ℥j (30 c.c.); spiritus ætheris nitrosi, ℥ss (15 c.c.); aquæ, q. s. ad ℥vj (180 c.c.). Dessertspoonful hourly for 6 doses; at alternate hours for 6 doses; then every three hours till crisis. Strychnine injections, alcoholic preparations, and kaolin cataplasms also used. *Lemon.* 674

Pneumonia, Lobar. TREATMENT. Sodium citrate internally found in most cases, especially in children, to cause fall in temperature, pulse, and respiration to normal within twenty-four hours; process in lung clears up soon after, third stage being apparently escaped. Administered in doses of 30 to 40 grains (2 to 2.6 Gm.) in adults every two hours, with a little citric acid or in lemonade. Dose for children to be calculated from 40-grain dose in adults. Drug to be continued till clearing up of process in lung complete. Active catharsis to be established at beginning of treatment. Sodium chloride should be supplied to system in about the normal daily amount (240 grains, or 16 Gm.), with the diet or otherwise. *Weaver.* 116

Administration of calcium chloride in 10-grain (0.6 Gm.) doses every four hours advised, from outset until three days after defervescence. Patients given it seem to do better than others. *Cornwall.* 175

Creosote carbonate observed to lower temperature considerably and diminish somnolence or delirium in pneumonic processes in children. Dosage, 5 drops (0.5 Gm.) three times daily for each year of age in first 3 years; in fifth and sixth years, 20 drops (2 Gm.) and in seventh to tenth years, 25 to 30 drops (2.5 to 3 Gm.). Administered readily in a spoonful of warm milk. To be continued in ½ doses for a week after auscultatory signs have disappeared. *Hunäns.* 162

Use of a 20 per cent. solution of camphor in olive oil previously washed with alcohol recommended in both lobar and bronchopneumonia. Mortality seemed lowered by post-trochanteric injections of this. Dose in cases of intermediate severity, 10 c.c. (2½ drams); in grave forms 15 and even 20 c.c. (3¾ and 5 drams), ½ the amount being injected morning and evening. In children 1 c.c. (16 minims) for each year of age is given. *Certain.* 299

Following mercury and sulphur combination advised in both lobar and lobular pneumonia: Hydrargyri chloridi corrosivi, gr. ss (0.03 Gm.); sulphuris præcipitati, ℥ij (8 Gm.); aquæ destillatæ bullientis, f℥iv (120 Gm.). This is to be shaken and then quickly given in the dose of 1 teaspoonful every two or three hours for two or three days. If, when the thirty-second dose is reached, catharsis has not occurred, ½ ounce (15 c.c.) of castor oil is given. Cessation of fever and loosening of cough promptly follow these measures; lung infection is apparently cut short. After evening temperature is normal, the mercury-sulphur mixture is continued for several days longer at four- to six- hour intervals. *Kolipinski.* 402

Vaccine treatment recommended. Stock vaccine sufficient, and should be begun as soon as diagnosis made. Inject 50 million bacteria as first dose, then increase rapidly, giving 100 million on second day, 200 million on third, etc., provided temperature has not abated after first injection; if it has, no further injection necessary. Marked relief from pain and dyspnea procured. *Bispham.* 552

Poisoning by Illuminating Gas. TREATMENT. I. First stage, preceding loss of consciousness: 1. Fresh air. 2. Aromatic spirit of ammonia. 3. Effervescent sodium phosphate, to produce eructations and relieve nausea. 4. Oxygen inhalation. 5. Analgesics for headache. 6. Avoidance of violent exertion.—II. Second stage, patient unconscious, but breathing: 1. Howard artificial respiration, rhythmic compression of lower thorax, to assist breathing. 2. Oxygen, preferably under pressure. 3. Camphor, caffeine, digitalis, and strychnine hypodermically. 4. External heat, if indicated. 5. Massage of muscles after aërating lungs. 6. Treatment to be conducted in warm room. 7. If not prompt recovery, venesection and normal saline infusion, or use of "pulmotor."—III. Third stage, patient unconscious and not breathing: 1. Same measures as in preceding stage. 2. Blood transfusion. 3. Artificial respiration by Schäfer method, patient prone. *McCombs.* 44

Prostatic Obstruction. TREATMENT. Two cases of prostatic obstruction relieved symptomatically and objectively with high-frequency cauterization of obstructing portion of the organ. This measure must be considered a possible means of treatment in cases where the offending part is localized and at the vesical neck. Feasible chiefly for patients tolerating cystoscopy well. Oudin current used. *Stevens.* 676

Psoriasis. TREATMENT. Potassium permanganate, 2 tablespoonfuls of a saturated solution added to a warm bath, recommended for acute universal psoriasis. After soaking in this for ten or fifteen minutes, patient to dry himself thoroughly and apply following lotion: Amyli, talci, of each, 40 parts; glycerini, 20 parts; acaciæ, 1 part; liq. plumbi subacetatis, 4 parts; liq. picis carbonis, 26.5 parts; aquæ, 200 parts. Tar baths, preparing by adding 1 or 2 glasses (℥viij or xvj) of an emulsion of coaltar, also excellent, though a tar salve, rubbed in after a bath, is often better. Following paste found efficient in some obstinate old patches: Acidi salicylici, 10 parts; chrysarobini, olei rusci, of each, 20

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parts; saponis viridis, adipis lanæ hydrosi, of each, 25 parts. Cover with oiled silk. A lotion of 1 part of lead subacetate solution to 5 of liquor picis carbonis, diluted 3j-Oj, may be used to envelop the part, covered with oil-silk, and allowed to remain all night. *Montgomery.* Page 175

Puerperal Sepsis. TREATMENT. 1. Complete physical and mental rest. 2. Well-ventilated room with sunshine. 3. Fowler position. 4. Cold sponging and ice-bag to head for hyperpyrexia. 5. Ice-bag locally in case of localized pelvic inflammation. 6. Saline enteroclysis by drop method. 7. Serum or antitoxin, to be followed by reliable stock vaccine if blood count favorable and patient lacks sufficient reaction to combat infection. 8. Whisky, quinine, etc., to be avoided. 9. Careful feeding at regular intervals. 10. Breast nursing to be stopped unless mental effect too depressing. 11. Curettage only for hemorrhage indicating foreign body in uterus. 12. Vaginal drainage under gas or scopolamine-morphine anesthesia if pelvic abscess develops. 13. No vaginal and uterine douches. *Gillmore.* 554

Magnesium sulphate solution, 2 per cent., filtered and sterilized and made with freshly distilled water, gave good results in 9 cases of severe streptococcic puerperal infection. Mortality very low. Of more value early in the infection than after secondary localization. *Harrar.* 676

Pyelonephritis in Pregnancy. TREATMENT. 1. Rest in bed. 2. Elevation of affected kidney. 3. Morphine or codeine for pain. 4. Early catharsis by calomel and salines. 5. Ice-cap to loin. 6. Cream of tartar water internally. 7. Diet: Milk, skimmed if much digestive disturbance, or lactone buttermilk. 8. Hexamethylenamine, gr. v-x (0.3-0.6 Gm.) with lithium or potassium citrate, gr. x, at three- or four- hour intervals. 9. Replace last after forty-eight hours by sodium benzoate, gr. x every two hours, until patient complains of burning in kidney region, when first combination should be resumed. 10. Potassium iodide or phenyl salicylate might also be used. 11. Argyrol (25 per cent.), 3j (4 c.c.), instilled into pelvis in cases persisting more than ten days. 12. In colon bacillus infections, autogenous vaccines, 30 to 50 million once a week, have been successful. 13. Induction of labor, in persistent cases late in pregnancy. 14. Nephrotomy and drainage where definite signs of surgical kidney present. *O'Connor.* 240

Quinsy. TREATMENT. To relieve dysphagia, place on tongue 0.3 to 0.4 Gm. (5 to 6½ grains) of dry orthoform or anesthesin powder. A few movements of deglutition, without previous admixture of saliva with the powder, will bring it in contact with affected parts. Measure also useful after operation on tonsils. *Hinsberg.* 418

Rachitis. DIAGNOSIS. In abdominal enlargement associated with rachitis greatest prominence of abdomen is at epigastrium; in tuberculous peritonitis, at or below umbilicus. Difference best elicited by measurements of circumference with tape measure, but also readily detectable on inspection. *Sheffield.* 676

Rectal Feeding. Best nutrient enema consists of milk pancreatized for twenty-four hours, with 5 per cent. of pure dextrose. *Short and Bywaters.* 555

Renal Inflammation. DIAGNOSIS. With patient sitting erect, but relaxed, lightly palpate lumbar muscles. If one kidney is seat of an inflammatory process, muscles on that side will feel firmer than normally. *Pottenger.* 418

Rheumatism, Gonorrheal. TREATMENT. Massage of joints by physician, beginning two weeks after start of disease, recommended. Effleurage alone permissible and no pain not readily tolerable should be caused. Support extremity, cover skin with petrolatum during massage, and use whole hand, to avoid localized pressure. Repeat at least once a day and keep joint in starch bandage between treatments. Commence passive movements as soon as pain so relieved that patient can stand them—in six to eight days or sooner. Massage of prostate essential for lasting results in the large proportion of cases with prostatic inflammation. Serum or vaccine to be given conjointly. *Wolf.* 547

Rheumatism, Muscular. TREATMENT. 1. Rest in bed. 2. Liberal diet of milk, eggs, light meats, farinaceous articles and cruciferous vegetables. Buttermilk and water between meals *ad libitum.* 3. General bath daily, with temperature progressively increased. 4. Massage, after pain and tenderness under control at least twenty-four hours. 5. In lumbago or other localized muscular troubles where general methods inefficient: Acupuncture or injection directly into involved muscle of 10 c.c. of ice-cold normal salt solution. 6. Where severe pain: Salicylates, at first in large hourly doses, with sodium bicarbonate. Locally, 20 per cent. salicylic acid ointment or liniment of oil of gaultheria, followed by flannel jacket or bandages, with hot-water bottles or electric pads. *Meyer.* 484

Rhus Dermatitis. TREATMENT. 1. To prevent further penetration of poison: Soap and hot water bath of whole body; discard all clothing exposed to the poison. 2. To relieve itching, water as hot as can be borne. 3. Curative remedies: Ichthyol collodion, 5 per cent., painted on lesions three times daily. Magnesium sulphate in saturated solution, applied on gauze, covered with rubber tissue and bandage. Iodine tincture, diluted with 9 parts of water. Hot 2 per cent. (or weaker) potassium permanganate solution; remove stain with 1 per cent. oxalic acid solution. 4. Where pustules have formed: Hot mercuric chloride solution. *Von Adelung.* 300

Scalp Wounds. TREATMENT. Shave scalp for some distance around wound, either dry or wet with alcohol; after area dried, paint with tincture of iodine and wash off surplus

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with alcohol. In suturing use figure 8 sutures, not too tight. Where parts badly torn, provide free drainage; stitches not to be too close together. In all fractures of skull give 40 to 60 grains (2.6 to 4 Gm.) of hexamethylenamine daily. *Harper.* Page 119

Scarlet Fever. TREATMENT. Salvarsan used in 109 cases. Striking effect on throat symptoms, especially in necrosing form, noted. Indicated in severe toxic forms especially. Good results even upon local application. Neosalvarsan not suitable. *Jochmann and Schreiber.* 364

Sciatica. TREATMENT. Good results from X-ray treatment in 11 out of 13 cases. Rays directed usually over lumbar region, sometimes over nerve itself. Small doses only. In cases resisting ordinary medical treatment and galvanic current, radiotherapy should always be tried, especially when sciatica due to compression of nerve-roots. *Delherm.* 365

Marked improvement in 2 cases after a few daily subcutaneous injections of 1 c.c. (16 minims) of 1: 1000 epinephrin solution. *Gaisböck.* 478

Where, after relief through rest in bed, pain recurs upon movements of thigh, nerve should be exposed and examined for adhesions. Very small adhesions may be removed by nerve stretching, but where large and numerous adhesions present, careful dissection with knife necessary, and offers great chance of permanent improvement. *Lewis and Taylor.* 555

Nourishing diet, with fats predominating, advised. Milk, cream, eggs, butter, marrow, bacon and oils to be given, with frequent feeding between meals, but meats to be eaten sparingly. Half an hour before each meal, give large cup of hot water containing a glycerophosphate. *Hunt.* 615

Septicemia. TREATMENT. Fixation abscess advised, consisting in injection of 15 minims (1 c.c.) of spirit of turpentine in cellular tissue of thigh, loin, or deltoid region. *Carles.* 413

Sinus Suppuration, Acute. TREATMENT. Apply 4 per cent. cocaine solution on cotton applicator, passed between end of middle turbinate and nasal wall. Follow by a cleansing alkaline solution and an oily spray containing menthol. To reduce pain and promote drainage: Hot, moist applications over whole face. Salicylic preparations, acetphenetidin, and quinine, to be used as indicated. Free catharsis. Irrigation of frontal or maxillary sinuses unnecessary unless there is trouble in antrum traceable to carious tooth. Vacuum treatment by negative air-pressure often useful. *Lemere.* 176

Sinuses, Tuberculous. TREATMENT. Tuberculin injections found effective in conjunction with other measures. Inject about 120 minims (7.5 c.c.) of 1: 500 old tuberculin solution into depths of sinus with syringe or small soft-rubber catheter, which is withdrawn as injection is being made. After 3 or 4 injections, increase strength to 1: 250 or even 1: 50, according to local and systemic reaction. *Niblett.* 617

Syphilis. TREATMENT. Following plan advised: Intravenous salvarsan injection, immediately followed by series (12 to 15) of intramuscular mercury salicylate injections, and later by 4 to 6 intramuscular injections of small doses (0.1 to 0.2 Gm.) of salvarsan in sesame oil. After this start new series of mercury salicylate injections, to be continued at increasing intervals during first year of disease. A number of the cases thus treated appeared to be cured. *Eisenstaedt.* 53

Salvarsan given intravenously in doses of 0.2 to 0.4 Gm., four to six times at weekly intervals, in 14 pregnant syphilitic women. Each gave birth at term to a living child, generally of normal weight, and none showing stigmata of the disease. *Jeanselme.* 299

Tabes Dorsalis. DIAGNOSIS. Spontaneous fractures not infrequently an initial or early symptom of tabes. *Taylor.* 54

Talipes Equinovarus. TREATMENT. Immediately after birth place strip of zinc oxide adhesive plaster over sole and inner aspect of foot, over correct position of latter, and draw plaster tightly along outer aspect of leg. Place second strip over sole just posterior to base of metatarsals, extending over inner aspect of foot and ending over joint of great toe. Draw firmly, apply to outer side of leg 1 to 2½ inches above external malleolus, and wrap around leg in ascending spiral. Place further strips to cover and tighten the second tension strip, beginning on leg 2 inches above ankle and overlapping until instep reached. Renew dressing, after cleansing foot with ether and alcohol, ten days or two weeks later. Deformity will be corrected in 6 or 8 weeks. Leave foot with stiff-ankle infant-shoe, with 1 strip of adhesive on outer side of foot and leg. *Allen.* 178

Tapeworm. TREATMENT. Thymol in cachets of 0.25 Gm. (4 grains) to be given in the morning on an empty stomach for eight days. Worm usually expelled on third or fourth day. Twenty-three cases treated with success. All alcohol to be stopped during treatment. *Artault.* 366

Tetanus. TREATMENT. Case in which spasms were controlled, sleep procured and feeding with milk rendered possible by repeated intravenous infusion of 15 to 30 c.c. each of ether and paraldehyde in normal saline solution. Produced prompt hypnosis, followed by relative muscular relaxation for several hours. *Atkey.* 556

Tetany. PROPHYLAXIS. In pregnant and puerperal patients and after gynecologic operations, when Chvostek's sign positive and symptoms such as paresthesia of hands, itching, pains in fingers in sewing or writing, and muscular weakness or stiffness present, give calcium chloride in following form: Calcii chloridi (puriss.), 3v (20 Gm.);

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syrupi menthæ piperitæ (vel syrupi rubi idæi), ℥ij (60 Gm.); aquæ destillatæ, ℥x (300 Gm.). Dose of calcium chloride to be carried as high as 75 to 90 grains (5 to 6 Gm.) a day in adults and, in newborn infants, to 15 grains (1 Gm.). *Kehrer.* Page 365

Tinnitus Aurium. TREATMENT. To relieve stuffiness of Eustachian tube—the most frequent cause of tinnitus—inject in it with catheter a 2 to 5 per cent. solution of dionin, using sufficient force to cause it to enter tympanic cavity. *Randall.* 491

Tonsillitis. TREATMENT. Following measures used in severe follicular tonsillitis and streptococcic sore throat: 1. Mixed streptococci vaccine subcutaneously. 2. Silver nitrate solution, gr. lxxx-f℥j, applied to tonsils once or twice daily. 3. Mild antiseptic gargle, used every two hours or oftener. 4. Calomel in fractional doses, until free catharsis occurs. 5. Ice-bags, as needed. 6. Salicylates and Dover's powder, to reduce temperature and quiet pain. 7. Plenty of fluids—water, milk, lemonade. 8. Acetylsalicylic acid, locally and internally. *Goldstein.* 405

Toxemia of Pregnancy. TREATMENT. Free administration of oxygen seemed useful in a number of cases, some severe. May be given either by inhalation or subcutaneously. internally. *G. P. Shears.* 242

Tuberculosis, Articular. TREATMENT. Thyroid substance indicated in sluggish cases, especially if evidences of thyroid inactivity present. Dose should be only ⅙ to ½ grain (0.01 to 0.03 Gm.) *pro die*, and patient watched for tachycardia. *Lereboullet.* 179

Tuberculosis, Laryngeal. TREATMENT. Submucous cauterization found to heal 70 to 85 per cent. of cases. Performed with electric cautery. Easier than curettage, and there is no bleeding. Not suited, however, for superficial ulcers on posterior wall, particularly those on the cords, which do better on the old method of lactic acid applications. *Pettit.* 237

To relieve dysphagia, place on tongue 0.3 to 0.4 Gm. (5 to 6½ grains) of dry orthoform or anesthesin powder. A few movements of deglutition, without previous admixture of saliva with the powder, cause it to descend into contact with diseased areas covering entrance to larynx, and in a few minutes patient can swallow without distress. Measure can be repeated three or four times daily for several weeks. *Hinsberg.* 418

Tuberculosis, Pulmonary. DIAGNOSIS. Value of percussion in earliest stage emphasized. With patient lying on back on couch, employ light percussion on terminal phalanx of a finger firmly pressed on spot under examination. Three characteristic dull areas on either side should be sought, which may all be present and of considerable size while apex is still very fairly resonant: 1. Opposite inner part of first intercostal space (percussing anteriorly) and inner part of suprascapular fossa (posteriorly). 2. Opposite outer part of same interspace, and outer part of suprascapular fossa. 3. In upper part of lower lobe, percussing posteriorly at end of spine of scapula, and anteriorly in second interspace. *Lees.* 54

Quantitative examination of albumin in sputum easily made and useful in diagnosis in doubtful cases. Technique as follows: To 20 c.c. of sputum as free from saliva as possible add a 3 per cent. acetic acid solution slowly, while agitating, until mucin is coagulated; add 2 parts of distilled water to sputum, shake well, filter through several layers of gauze, add a few drops of acetic acid solution, filter, and test filtrate for albumin by any ordinary test. If more than a trace present make quantitative test with Esbach's tube and multiply reading by 3 to get percentage. All active cases give positive reaction. *Works.* 117

In very early infiltration of right apex, auscultation at acromial end of right clavicle yields prolonged expiratory sound, louder spoken voice, and slightly increased whispered sound. In case of incipiency of left apex, breathing under clavicle becomes markedly bronchovesicular, with increased voice and whispered sounds. Acromial auscultation in first stage tuberculosis yields signs which, found over lung tissue, would indicate absolute consolidation, *i.e.*, signs are greatly exaggerated and made evident. Acromial auscultation also reveals râles when these would be missed or indistinct over apex. *Abrahams.* 544

TREATMENT. 1. Inhalation of following solution: Creosoti, phenolis, spiritus chloroformi, ana 3ij (8 c.c.); tincturæ iodi, spiritus ætheris, ana 3j (4 c.c.). Two Yeo inhalers to be used on alternate days, cleansed by immersion in boiling water and careful drying. Patient to pour 6 to 8 drops of solution on felt of inhaler *every hour* during daytime, and once or twice during night if awake. Petrolatum or lanolin cold cream to be smeared over nostrils and upper lip before use of inhaler at first. 2. Period of rest in bed at beginning of treatment. 3. Treat digestive disturbances. 4. Give a sufficiency of easily digested food; malted milk, dissolved in scalded whole milk, after each meal. 5. Careful disinfection of mouth 4 times daily, after the milk; antiseptic sprays for unhealthy conditions of fauces. Forty-eight complete recoveries in 70 cases thus treated. *Lees.* 54

Hydrotherapeutic measures, to be employed in 4 successive stages or steps, described: I. Ablution, beginning with water at 90° F., gradually reduced, by 2° daily until 60° F. reached; followed by drying and, if possible, exercise in open air. II. Affusion. With patient standing in water at 105° F., water at 85°, gradually reduced to 60°, is thrown over back and chest. III. Cold rub. With patient standing in water at 105°, a sheet is wrung out in water at 80°, gradually reduced to 50°, and actively rubbed till sheet warm. IV. Drip sheet. Same as last, with sheet

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dripping; patient rubbed and slapped for two minutes; water at 70° then poured over shoulders, and friction applied till sheet warm; same procedure rapidly repeated over other parts of body. *Baruch.* Page 56

Olive oil, ½ ounce (15 c.c.) two hours after each meal, increased weekly by ½ ounce up to 3 ounces, found to cause considerable gain in weight. *Bram.* 47

Sodium cinnamate subcutaneous injections found superior to cacodylates in all varieties of cases in which a general tonic effect required. Initial dose, contents of 5 c.c. (1¼ drain) ampoule, including 0.5 Gm. (⅝ grain) of the cinnamate; this to be rapidly increased by one-half, bulk of solution, however, being kept the same. Injections given daily. *Laborde.* 118

Importance of hyperalimentation in cases of tuberculosis in pregnancy where it is decided not to empty uterus emphasized. Use of following mixture advised to increase appetite: Lysol, 1 part; ichthyol, 10 parts, and glycerin 20 parts. Begin with 1 drop and increase by 1 drop at each dose up to 30 drops, which is maintained. Preparation dropped into half tumblerful of water and taken just before meals. *Stewart.* 175

Four to 8 capsules, each containing 4 grains (0.25 Gm.) of liver substance, *pro die* found effective in arresting or preventing return of hemoptysis. In cases with low arterial tension and asthenia, epinephrin, 5 to 10 drops of 1: 1000 solution daily for five to ten days, followed by like period of rest, or of adrenal substance, 1½ to 5 grains (0.1 to 0.3 Gm.) daily, is indicated. Bayle secures good results by administering 100 Gm. (3½ ounces) of fresh hog spleen every day. Loeper and Esmonet advise pancreatin, 2 to 4 Gm. (3ss-j) in keratin-coated capsules of 0.25 Gm. (4 grains) each, daily in first and second stage cases, and especially in patients with involvement of serous membranes; improves appetite and general condition. *Lereboullet.* 179

Sluggish, afebrile cases of tuberculosis, especially with profuse expectoration, are often greatly benefited by creosote. *Fishberg.* 180

Addition of tuberculin to sanatorium treatment found to increase chances of clearing sputum of tubercle bacilli by about 17 per cent. in early and moderately advanced cases. *Bardswell.* 363

Treatment of cough in phthisis described: (1) For nervous cough: Swabbing throat with 30 per cent. potassium bromide solution, or taking 15 grains (1 Gm.) of this salt in water. (2) For pharyngeal cough: Gargling with betanaphtholis, gr. iij (0.2 Gm.); sodii boratis, ℥ss (15 Gm.); aquæ menthæ piperitæ, ℥vij (24 c.c.); aquæ, q. s. ad ℥xxxv (140 c.c.). If inflammation present, pharynx to be swabbed with: Cocaine hydrochloridi, gr. ij (0.12 Gm.); resorcinolis, gr. xv (1 Gm.); glycerini, ℥j (30 c.c.). Following gargle also useful: Sodii salicylatis, ℥vj (24 Gm.); antipyrinæ, ℥j (4 Gm.); aquæ laurocerasi, aquæ aurantii florum, āā ℥ss (2 c.c.); glycerini, ℥iiss (75 c.c.); aquæ destillatæ, q. s. ad ℥xxxv (140 c.c.). (3) For laryngeal cough: Orthoform powder or a solution of balsam of Peru; following draught: Tincturæ bryoniæ ♏x (0.6 c.c.); tincturæ aconiti, ♏xx (0.2 c.c.); tincturæ belladonnæ foliorum, ♏x (0.6 c.c.); syrupi opii, ℥j; aquæ, ℥iv; one teaspoonful every two hours. (4) For tracheal cough: Terpini hydratis; pulveris ipecacuanhæ et opii, āā gr. ij; to be taken in cachet two or three times a day. (5) For gastric cough, 2 drops of opium tincture or ⅛ grain (0.01 Gm.) of codeine ten minutes before each meal. *Robin.* 363

Following formula recommended: Guaiacolis puri, gr. xxx-xl; quininæ hydrochloridi, gr. xx-xxv; alcoholis, ℥ij; tincturæ gentianæ compositæ, ℥iij; aquæ, q. s. ad ℥viij. Half-teaspoonful gradually increased to 2 teaspoonfuls to be given, well diluted, three times daily after meals. Guaiacol carbonate then gradually added to increase amount of guaiacol taken. Tuberculin (T. R.) also to be administered, beginning with $\frac{1}{100000}$ to $\frac{1}{80000}$ mgm., then doubling dose every four days if no fever followed previous dose. *Voight.* 554

Solution consisting of iodoform, 1 Gm. (15 grains); camphor, 2 Gm. (30 grains); guaiacol, 5 Gm. (75 grains); essence of mint, 30 drops, and olive oil, 20 Gm. (5 drams), injected through intercostal spaces into diseased lung tissue or cavity in 22 cases with success. In adults, 20 to 60 injections given, according to extent of disease. Dose, ordinarily 1 c.c. (16 minims), but for cavities, as much as 4 to 6 c.c. (1 to 1½ drams). Most favorable area between second and sixth ribs on either side. To reach apex, inject through second intercostal space in dorsoscapular region. *D'Amico.* 617

Phosphorus in the following form given to 100 cases with gratifying results in all but 3 cases: Calcii hypophosphitis, ℥ss-ij (2-8 Gm.); tincturæ phosphori (1: 1000; dissolve first in chloroform, then add absolute alcohol), liquoris arseni iodidi (1: 100), āā f℥ss-ij (2-8 c.c.); syrupi ferri iodidi, ℥ss-j (15-30 c.c.); aquæ, q. s. ad ℥vj (180 c.c.). One dessertspoonful 4 times a day, after food and at bedtime, in water. Iodine deleted from formula when not tolerated. Expectoration copious for two to ten weeks after beginning of treatment, then rapidly diminished and ceased. Great improvement also in tuberculosis of glands and joints. *Lemon.* 674

Good results obtained from a preparation containing to the dram (4 c.c.) 10 grains (0.6 Gm.) of pure calcium iodide and 1½ grains (0.1 Gm.) of ferrous iodide, dissolved in glycerin. Dose, 30 minims (2 c.c.) in water 3 times daily after meals, gradually increased to 1 dram (4 c.c.). If given before meals, increases appetite. Daily intramuscular injections of ¾ grain (0.05 Gm.) of calcium cacodylate, previously put up in sterile ampoules, simultaneously given. Injections

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only on alternate days after a week. Best results in incipient cases. *Jackson.* Page 680

Acetylsalicylic acid recommended for cough in tuberculosis. Dose, 5 or 10 grains (0.3 or 0.6 Gm.) at 8 P.M. to prevent cough at night. *Blackwood, Jr.* 680

Tuberculosis, Surgical. TREATMENT. Use of "injectio trypsini" recommended for tuberculous abscesses of all kinds, synovial hydromata, sinuses, arthritis, etc. After an insignificant local reaction, pain, tenderness, and tubercle bacilli disappear, pus becomes more fluid and undergoes absorption, and healthy tissues proliferate. Dilute the preparation as supplied with 2 to 10 parts of sterile saline solution, inject strictly subcutaneously 1 c.c. (of pure preparation), and distribute beneath skin by gentle massage, one to three times a week. Where abscesses, puncture with trocar and inject; where sinuses, inject into surrounding tissues in several places; where ulcers, under their bases; where synovial hydromata, into the sheath, and where tuberculosis of joints, in part directly into joint, partly into surrounding tissues. Undiluted injection used in the joint cases. *Baetzner.* 301

Tympanites. PROPHYLAXIS. Hexamethylenamine found useful to prevent excessive abdominal tympany after operations. For two days beforehand, 10 grains (0.6 Gm.), dissolved in glassful of water, given every two hours between. After operation, 120 grains (8 Gm.) dissolved in 1 quart (liter) of drinking-water and given to patient in small quantities within twelve to twenty-four hours. Ten grains (0.6 Gm.) in water then given as before every two hours, 60 to 120 grains being thus administered on each of the three days following operation. Where vomiting exists, drug given by rectum. *La Roque.* 608

Typhoid Fever. DIAGNOSIS. Modified Russo test recommended: Place in a test-tube enough of a just translucent aqueous solution of methylene blue to extend just above the bowel. Then fill tube with urine and, after mixing, examine color against good daylight. Emerald or mint green indicates positive reaction; any tinge of blue renders it negative. Urines containing bile or blood not suitable for test, and those clouded by phosphates, urates, etc., should be filtered. Test is constantly positive in typhoid and but rarely in other conditions; negative reaction is good evidence of absence of typhoid. Appears early in the disease. *Neuman and Behrend.* 429

TREATMENT. Olive oil considered very useful as a food in 1- to 3- ounce (30 to 90 c.c.) doses 3 times daily. Also useful as a laxative; high injections of lukewarm oil may be given. *Bram.* 47

Collective statistics as to results of use of typhoid vaccines show 423 cases, with only 5.4 per cent. deaths. Dosage used by author: Initial hypodermic injection of 500,000,000, repeated at four-day intervals as long as required, and increased by 100,000,000 each time. Stock-vaccine injections made just under skin over insertion of deltoid or over tensor vaginæ femoris. *Callison.* 57

Series of 65 cases treated without milk, on diet consisting of broths, soups, gruels, gelatin, eggs, sugar of milk and butter. Gelatin given almost ad libitum—6 ounces of 5 per cent. solution, flavored with lemon, vanilla, etc., five times daily. Mortality low, persistent diarrhea only in 4 cases, hemorrhage in 4 and perforation in none. *Johnson and Watt.* 181

Iodine, in aqueous solution or as tincture—the latter in doses of 15 to 25 drops daily in a mixture of cinchona and malaga wines or in milk—given in 44 cases. Cases with profuse diarrhea, distention or nausea appeared to improve, rapid recovery usually occurred, and mortality seemed to be lowered. *Arnozan and Carles.* 304

Pure gelatin recommended for prevention of intestinal hemorrhage and for its nutritive properties. Olive oil, 1 to 3 ounces a day, also valuable adjuvant, tending to obviate loss in weight, useful as laxative, protecting mucous membrane, diminishing tendency to hemorrhage, and almost always preventing distention and with it perforation. *Bram.* 681

Ulcers. TREATMENT. Value of dry treatment of wounds, burns and ulcers emphasized. Keeping a leg ulcer exposed to air, lightly dusted with aristol and stearate of zinc, is an effective treatment. Patient should lie down, elevate leg and protect it from flies and dust with thin layer of gauze. *Pitfield.* 285

In chronic leg ulcers, wash affected surface and surrounding area with 90 per cent. alcohol, and apply following ointment on sterile gauze, with firm bandage from foot to knee: Acidi borici, ʒij (8 Gm.); adipis lanæ, petrolati, ana ʒij (60 Gm.). Repeat washing with alcohol next day, give whole leg massage with alcohol and stiff brush, and reapply ointment. After a few days, scrape base and edges of ulcer clean. Use the wool-fat ointment for two or three weeks, then 5 to 10 per cent. thymol iodide in cold cream. Continue alcohol treatment, and cauterize granulations with silver nitrate if necessary. *Wade.* 356

Urethritis, Gonococcal. TREATMENT. Fluidextract of aconite recommended for relief of congestion and irritation; 1 minim every one or two hours for intelligent patients and every three or four hours for unintelligent. Interval to be doubled as soon as tingling, perspiration and a feeling of relaxation appear. *Pedersen.* 305

Anesthesia of urethral mucous membrane can be completely and satisfactorily produced by 1: 2500 or 1: 5000 potassium permanganate solution. Found useful to reduce sensitiveness before passing sounds in stricture. *Barton.* 557

Urticaria. TREATMENT. Epinephrin given subcutaneously in doses of 8 minims (0.5 c.c.)

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in 6 cases. Two doses always caused complete fading of rash and cessation of itching in ten to twenty minutes. Recurrence probable in an hour or two unless treatment continued. *Swann.* Page 164

Vaccinal Ulcers. TREATMENT. Constant application of antistreptococcic serum as a wet dressing, covered with oiled silk, to indolent ulcers resulting from extraneous infection of vaccination site, recommended. Remove oiled silk and remoisten dressing, without disturbing it, three or four times daily. *Sexton.* 492

Vincent's Angina. TREATMENT. In mild cases, best results from use of trichloracetic acid. Membrane first removed by hydrogen peroxide and wiping with cotton swab; ulcer then anesthetized with 10 per cent. cocaine solution, and trichloracetic acid applied a few minutes after. Usually 3 or 4 applications at 2- or 3- day intervals necessary. Tincture of iodine preferable where ulceration extensive. For pain, orthoform. Carious teeth to be cared for. General condition also to be improved. *Halstead.* 58

Vomiting. TREATMENT. In a number of instances vomiting can be immediately arrested by means of the pyloric reflex of dilatation, which consists of pressure or concussion of the fifth dorsal spine. *Abrams.* 394

Vomiting of Pregnancy, Pernicious. TREATMENT. Sodium bicarbonate, 5 to 50 grains (0.3 to 3 Gm.) a day, recommended. Part of it often vomited, but some retained. Continue for a week after vomiting stopped. Bowels to be well cleared by colonic flushing. Veronal also found useful. *Lyon.* 59

Whooping-cough. TREATMENT. Pertussis bacterin used in 40 cases. Disease not shortened, but bacterin causes, after preliminary slight aggravation, well-marked, and sometimes remarkable, symptomatic improvement in a certain proportion of cases. Best results produced at the height of the disease. Give 2 or 3 full doses—20 to 50 million bacteria each—at five-day intervals. In young infants moderate doses should be given early; they diminish severity of disease and minimize complications. *Zahorsky.* 48

Pertussis vaccine used in 17 cases. Best dose found to be 40 million bacteria, given in buttocks even to an infant twice a week, or in severe cases in old children, 3 times a week for one week only. If much benefit noted, intervals prolonged, and vice versa. Many cases improved after single dose. No reaction from injections, local or general. Vaccine should be used only in undoubted cases of the disease. The younger the infant, the more rapid the cure. *Scott.* 174

1. Following preparation recommended: Ichthyolis, ʒiiss (10 Gm.); glycerini, ʒss (15 Gm.); liquoris calcis, ʒiiss (10 Gm.); olei amygdalæ amaræ, gtt. iij; olei anisi vel menthæ piperitæ, gtt. x; syrupi, q. s. ad ʒiiiss (100 Gm.). Dose in children up to 1 year of age, 4 to 6 teaspoonfuls; up to 2 years, 3 to 4 dessertspoonfuls; 3 to 4 years, 4 to 5 dessertspoonfuls; 5 years and upward, 4 to 5 tablespoonfuls. These doses can be exceeded in obstinate or long-standing cases, or those complicated with capillary bronchitis or bronchopneumonia. 2. As adjuvant in young children: Instillations of weakly mentholated oil in nose. 3. Emetic and purge at beginning of treatment. 4. If bronchopulmonary complications should appear: Mustard baths and antiseptic inhalations. 5. Where hemoptysis: Inject diphtheria antitoxin and, this failing, hepatic extract. *Naamé.* 306

Wounds. TREATMENT. Treat all wounds on which great force has been exerted, and especially those contaminated by soil and dirt-covered objects, as if infected with gas bacilli. Leave open where possible and irrigate thoroughly with peroxide. Bandage lightly, if at all. Inspect frequently and irrigate often. On first sign or symptom of infection, take smear and examine for *B. aërogenes capsulatus*. Open wound freely, if sutured, and if on limb place latter in bath or irrigate continuously. If condition extensive, expose field widely to air by free incisions. (Do not employ peroxide in full strength or inject in confined spaces or directly under tissues.) *Cramp.* 42

Wounds of face and hands should be closed with subcuticular stitches, especially in women. To prevent subsequent stretching of scar, close superficial fascia with interrupted fine silk sutures before applying subcuticular stitches. After injuries to soft parts of hand, cleanse quickly by immersing in gasolene; after latter has evaporated, sterilize parts with tincture of iodine and alcohol. *Harper.* 119

Application, in gunshot wounds, of steaming towels wrung out in water as hot as can be borne, during thirty minutes night and morning before wound is dressed, recommended. To be continued till all inflammation subsides. *Griffith.* 110

Use of paste made by adding a few drops of mercury bichloride and ammonium chloride solution (1:2000) to small quantity of zinc oxide recommended for slight wounds, abrasions, injection punctures, indolent ulcers, sores about the face, etc. Where much stinging and itching about abrasions, substitute 2 per cent. phenol for bichloride. *Hiden.* 182

Scarlet red ointment, 2 to 4 per cent., advised for acceleration of healing in granulating postaural operative wounds, after radical removal of rodent ulcers, etc. *Allan.* 359

Glucose used as dressing in 100 cases, including acute and chronic osteomyelitis, extensive putrid foci, infected wounds, varicose ulcers, drainage wounds after operations, etc. Pronounced disinfectant, detergent, and deodorant effects, with tendency to cause prompt healing, noted. *Magnus.* 618

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ANNOUNCEMENT.

AMERICAN THERAPEUTIC SOCIETY—1914 MEETING.—The date of the next annual meeting of the American Therapeutic Society has been changed from May 4 and 5 to May 29 and 30, 1914. It is to be held in Albany, N. Y.

Book Reviews

THE NARCOTIC DRUG DISEASES AND ALLIED AILMENTS. Pathology, Pathogenesis, and Treatment. By George E. Pettey, M.D., Member Memphis and Shelby County Medical Society, Tennessee State Medical Association, etc. Crown Octavo of 516 Pages, Illustrated. Philadelphia: F. A. Davis Company, 1913. Cloth, $5.00, net.

The author of this book, from experience in over 3000 cases, looks upon drug addiction as essentially a toxemia, belonging, therefore, to the field of internal medicine rather than to neurology. The toxemia is represented not only by the drug itself, but by poisonous substances of autogenous and intestinal origin. The essential principle in the treatment he advocates is elimination, though he considers hyoscine, provided it be not used in rash dosage, to occupy much the same relation to the treatment of morphinism as ether does to surgery, saving the patient from intense suffering and rendering what would otherwise be unsafe and difficult safe and easy. After preliminary sections on the pathogenesis, etiology, and symptomatology of opiate addiction, the rationale and details of the author's treatment are set forth at great length. Stress is laid on the value of sparteine in full doses in these cases, and on the necessity of employing a "physiologically balanced" purgative combination. The author recommends large doses of strychnine to assist the cathartic action. A chapter is also devoted to other drugs that may be useful under certain circumstances, *e.g.*, gelseminine, pilocarpine, aspirin, hydrochloric acid, hypnotics, etc. Next follow sections on physical training and diet for these cases. After pointing out reasons for some of the past failures in the treatment of morphinism, and making a plea for a more just judgment of drug users, the author discusses at length the therapeutic methods of various other observers, pointing out wherein, according to his views, their defects lie. In the last 80 pages of the book cocainism and alcoholism are considered. The author believes that much misconception exists as to the nature and treatment of the cocaine habit, and holds that when this drug is taken alone the treatment consists simply in active catharsis, withdrawing the cocaine, and allowing the patient to sleep uninterruptedly. In the treatment of chronic gastric catarrh in alcoholics he prefers ichthyol in dilute solution, disguised with cinnamon water, to all other remedies. In short, this book, with the new and detailed presentation of the morphine habit it affords, will prove indispensable to all those having to treat cases of this form of addiction. The general practitioner, in reading it, will not only gain a deeper insight into the essential nature and rational treatment of drug habits than is usually obtained from more general textbooks, but will find valuable data presented as to the management of acute ailments occurring in narcotic and alcoholic habitués, the withdrawal of narcotics after prolonged use during acute ailments, the care of infants born of drug-using mothers, etc. The botanical name *"Cysticus,"* on page 217, referring to the broom plant, should be corrected to *Cytisus.*

THERAPEUTICS OF THE GASTROINTESTINAL TRACT. By Dr. Carl Wegele. Translated and Edited, with Additions, by Maurice H. Gross, M.D., Attending Gastroenterologist to the Har Moriah Hospital, and I. W. Held, M.D., Attending Physician to the Har Moriah Hospital, New York. Octavo of xvi + 329 Pages, with 52 Illustrations in the Text and 2 Figures in Colors on One Plate. New York: Rebman Company, 1913.

Dr. Wegele's book is characterized chiefly by concise and condensed presentation, with special attention to the practical aspects of the subject. In its 300 pages will be found as much useful information as in many a larger work. The American editors have further completed and enlarged the scope of the original German text by adding a chapter on the esophagus, amplifying the sections on diagnosis, inserting a chapter on X-ray diagnosis (based largely on their own clinical experiences), another on the "duodenal tube," and still another on diseases of the pancreas, besides minor sections on parasitic affections and diseases of the intestinal blood-vessels. The literature of the subject was consulted up to the time of going to press, and the newer diagnostic tests will be found included. The first hundred pages are devoted to methods of diagnosis and to general treatment—dietetic (very fully considered), physical, and medicinal. Next are taken up in succession the special

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diagnosis and treatment of diseases of the esophagus, stomach, intestines, duodenum, and pancreas, with special chapters on change of tone, motility, size and position of the stomach, gastric neuroses, ulcers, and tumors. The translation is quite adequate, though a few such Latino-German expressions as "ulcus pepticum esophagi" appear unchanged. American readers will be glad to avail themselves of this useful volume.

BLOOD-PRESSURE from the Clinical Standpoint. By Francis Ashley Faught, M.D., Formerly Director of the Laboratory of Clinical Medicine of the Medico-Chirurgical Hospital; Instructor in Medicine at the Medico-Chirurgical College, Philadelphia. Octavo of 281 Pages, Illustrated. Philadelphia and London: W. B. Saunders Company, 1913. Cloth, $3.00, net.

This book represents the first attempt, in the English language at least, to present monographically the various phases of blood-pressure study from the special standpoint of the practitioner, that is, omitting all unnecessary technicalities and theories and keeping more or less strictly to facts of practical significance. The work covers the ground quite thoroughly, beginning with the physiology of the circulation and the description of various sphygmomanometers, after which follow, in order, the theory of sphygmomanometry; the factors influencing blood-pressure; the relation of blood-pressure to exercise; the varieties and causes of hypotension, hypertension, or presclerosis; arteriosclerosis; blood-pressure in renal diseases; in myocardial degeneration; in acute infections; in chronic infections, and in metabolic and miscellaneous diseases; blood-pressure in surgery, in obstetric practice, and in life insurance, and the methods—pharmaceutic, dietetic, and physical—of controlling blood-pressure. A number of interesting charts showing the effects of various measures on the blood-pressure are presented. On the whole, the work may be said to answer very acceptably the needs of the practitioner. The proofreading does not seem to have been given due care, and the punctuation is poor in spots. In the table on page 232, "nitrate," referring incorrectly to the sodium and potassium salts of nitric acid, should be changed to "nitrite." "Glandular suprarenalis sicca" on page 176 should read "glandulæ suprarenales siccæ"; "Rinon and De Sille" on page 177, "Rénon and Delille," and "Careman, Aub and Briger" on page 270, "Cannon, Aub and Binger." On page 177 the dose of pituitary extract is given as "⅙ gr."; it should be specified that this means gram and not grain, as one might infer from the fact that elsewhere in the volume grain is also abbreviated to "gr." The paper is unnecessarily thick. All these are minor deficiencies which can easily be remedied in the next edition.

HYGIENE AND SANITATION. A Textbook for Nurses. By George M. Price, M.D., Director, Joint Board of Sanitary Control, New York; Director of Investigation, New York State Factory Commission. 12mo of 236 Pages. Philadelphia and New York: Lea & Febiger, 1913. Cloth, $1.50, net.

A considerable expansion of the field of service of the trained nurse has taken place in recent years. Especially in regard to the new activities undertaken—in the school and factory, in the social part of dispensary work, in milk stations, in the preventive work conducted by life insurance companies, etc.—is a knowledge of the basic principles of hygiene and public health essential for intelligent work. This knowledge the present little work suitably affords. Nursing of the sick is not taken up in detail, the text being devoted to the hygiene of habitations, of foods (including milk), of schools and school children, of occupations and of municipalities, with a final chapter on personal hygiene—prevention of constitutional diseases, increase of vital resistance, hygiene of children and the aged, etc. The selection of facts for incorporation in this book has undoubtedly been a judicious one. The chapters on the hygiene of foods and that of schools and school children are particularly valuable. The work well subserves the purpose for which it was written.

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The General Field

Conducted by A. G. CRANDALL

All Things to All Men

Blue vitriol and dynamite are not the only Pankhurst weapons. In the conquest of New York the leader of militancy employed no methods of physical violence, but she gave Anthony Comstock opportunity for contemplation.

The sale of the Pankhurst publications against the protests of the New York apostle of expurgated literature shows that realism is expected to do for America what the bomb and torch are doing for England. The noble cause of equal suffrage failing to draw the crowd at the first meeting, morbid curiosity in the Pankhurst literature was invoked for the other lecture, and worked marvelously. With a natural desire not to disappoint the crowd eager for "details" several speakers are said to have out-Sylviaed Pankhurst herself in the outspoken frankness of their speech.

It would be inappropriate in noting this enjoyable occasion to omit mention of Upton Sinclair, novelist, and Norman Hapgood, editor, who took an active part in making the last Pankhurst meeting a financial success.

Mr. Comstock is not reported to have been present.

Monotony as a Morbific Influence

The medical director of a prominent insurance company deplores the fact that, while infant mortality compared with that of the earlier ages has shown a remarkable decrease in recent years, the death rate among those of 45 or older has on the whole increased rather than decreased.

These observations are being confirmed on every hand, but it is not often that the reasons for continued high mortality after middle age are set forth with so much clarity and logical reasoning as in this particular instance. This observer points out one very depressing influence that is commonly exerted upon the average worker, which in his judgment accounts for that abnormal disintegration. This influence is nothing more nor less than a deadly monotony of occupation.

The great proportion of men of middle age or over become settled in some economic groove whereby their energies and efforts are all concentrated in one direction. They do the same things week in and week out, and year in and year out, with consequent depression and lack of zest in living.

This is, of course, a natural result of an age of specialization. The industrial experts who preach business and industrial efficiency are interested only in financial results. They secure the results, but at a tremendous physical cost to the employé.

A physician engaged in routine practice knows too well the nervous and physical strain induced by the never-ending grind of his profession. If he is a wise man he so arranges his affairs that he can, at reasonable intervals, turn his practice over to an assistant or an associate and devote a reasonable period to some form of relaxation. To the average worker this is impossible, and the man

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who is apparently in fair physical condition and able to devote full time to his occupation may six or twelve months later develop grave symptoms of impending collapse.

It is well that these significant facts be given wide circulation. There is something radically wrong and uncanny in seeing a person, whose ordinary expectation of life may be fifteen or twenty years, suddenly go to pieces and pass out of this existence. The efficiency promoters will never have solved their problem until they have found a way to introduce a reasonable amount of variety into the daily routine of the average worker.

The Cold-storage Villains

Those depraved people who save up eggs when the supply exceeds the demand, thus preventing waste, and who bring out these reserves at a period when every self-respecting hen is taking a vacation from laying in order that she may renovate her winter costume, have been getting their just deserts.

A so-called Consumers' League, composed of women with wrongs to be righted, has been on the warpath again. They propose to teach the cold-storage people a few lessons.

Of course, it could not be expected that those who form infallible opinions by the simple process of ignoring facts could be interested in facts.

But the destruction of numerous tons of holiday turkeys because as the result of inadequate cooling they have become unfit for food should convey some ideas as to what the cold-storage interests mean to a population of ninety millions. It is not pleasant to think of the loss of so much good food with prevailing prices.

Until the Consumers' League installs storage plants of its own the people in general must depend upon the storage plants already in operation. In the mean time the Consumers' League may buy eggs or go without as they prefer. Certainly no one could be so rude as to question such a right, least of all those actuated by the desire to make and save money themselves, as no doubt the storage interests would admit to be their own motive.

The Great Profession

Straws tell which way the wind blows. The coming books for boys will not bear such titles as "From the Log Cabin to the White House," but deal with a different form of achievement. "From the Four Room Flat to the League Championship" may be logically suggested at the present time.

The Governor of Pennsylvania has laid aside his political ambitions to become a baseball magnate. This is a high position. He will leave a high position as governor, yet this matters little by comparison. He was at one time a big-league player himself.

This is perhaps the dominating instance of glory at the present period. To be a big-league player is fame; to pass on to the governorship of a great State is gratifying; to then become the head of the baseball world is to put one over Hannibal, Charlemagne, Napoleon Bonaparte, and even Lieutenant-General Nelson A. Miles.

Real Farming

A farmer in the famous Connecticut Valley is reported as having this year raised 900 bushels of onions on a single acre, which, owing to the prevailing unwillingness of farmers to raise onions, he was able to sell for sixty cents per bushel.

Such agricultural victories help to banish the specter of famine. All that is required is that the average American

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citizen acquire the fondness for this succulent vegetable which the Italians have, for example, and grim want may be a thing unknown. No one need starve who likes onions if it be possible to raise 900 bushels on a single acre.

The chief difficulty will probably be found in making the average American citizen like onions.

A Timely Warning

A certain prominent citizen is reported to have lost his life from ptomaine poisoning through eating a gray squirrel he had succeeded in shooting. The attending physician decided that the poisonous condition of the meat was due to the fact that the squirrel had eaten chestnuts which grew on a tree infected with chestnut blight.

This is a rather complicated etiology, but if accepted as authentic it may give a new lease of life to these picturesque and harmless little animals.

There could hardly be a less sportsman-like sport than the slaughter of squirrels unless it be the propensity of some of our foreign population to slaughter songbirds for food. The "Good morning, let's go out and kill something" which some sarcastic critic has applied to the typical Englishman can with equal justice be adapted for American use.

Lawful Money

The congressional debates on the currency bill reveal the fact that even among those who are generally supposed to be familiar with national history the paternal functions of government are supposed to be without any limit of danger.

In shaping the proposed currency law the redemption of outstanding paper money is threatened with the vague and indefinite term "lawful money."

Lawful money—what a familiar sound it has! Those who remember the silver agitation will also recall the jaunty assurance with which the doubtful ones were informed that this powerful government could make dollars out of fifty cents' worth of silver. It would be lawful money and the obligations of the debtor class could thus be lawfully redeemed.

The depreciated paper currency of the Revolution and also of the Civil War was always lawful money, a medium which, if accepted with reluctance by the rich, invariably reacts most unfavorably upon the poor.

Losing One's Self

A large number of people disappear every year, especially in the cities. They walk out of their houses or places of business apparently in a perfectly normal state of mind and body and are never heard from again.

It is an unfortunate characteristic of human nature to ascribe some ulterior motive for most of such disappearances. If it is a man with a family, he is supposed to have become tired of his home; while if it is a woman, and especially a young woman, she is supposed to have been abducted for some sinister purpose.

These disappearances can often be explained on the basis of an attack of aphasia. A person in an apparently normal condition suffers from a sudden lapse of memory. They forget their identity and sometimes apparently they never find themselves.

The high tension of modern life tends to cause an increase in the number of those thus afflicted. At the present time aphasia is practically unknown except to the medical profession. There should be more popular education as to the nature of this malady. Perhaps no class of citizens are in greater need of such knowledge than the average police official or detective.

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INDEX

List of Contributors

ABRAMS, ALBERT, 7, 393.
ANDERSON, H. B., 641.

BABCOCK, W. WAYNE, 659.
BARNES, NOBLE P., 1, 577.
BARTHOLOW, PAUL, 453.
BARTON, W. M., 649, 722.
BENNETT, W. C., 217.
BISHOP, L. F., 499.
BROOKS, NATHANIEL P., 203.

CHANDLER, SWITHIN, 539.
COATES, G. M., 655.

DERCUM, F. X., 321.

ELGIN, W. F., 9, 83, 147.
EVANS, GEORGE H., 520.

FISHER, MULFORD K., 716.
FRIEDENWALD, JULIUS, 329.

GALLANT, A. ERNEST, 70.
GLEASON, E. B., 392.
GOLDSTEIN, HYMAN I., 336, 405.
GOMPERTZ, LOUIS M., 139.
GORDON, ALFRED, 193.

HITCHENS, A. PARKER, 9, 83, 147, 590.
HOLT, E. E., 30, 89.

JARVIS, GEORGE O., 7.
JOURDAN, V. J. P., 270.

KOLIPINSKI, LOUIS, 398.

LEITZ, T. F., 329.

McCONNELL, GUTHRIE, 515.
McCREADY, E. B., 145.
McGLINN, J. A., 135, 198.

MILLS, H. BROOKER, 458.
MONTGOMERY, C. M., 257.
MORRIS, R. T., 513.

OSBORNE, OLIVER T., 261, 727.

PITTENGER, P. S., 9, 83, 147, 526.
PORTER, W. H., 65.
POTTENGER, F. M., 583.

QUACKENBOS, J. D., 597.

ROBINSON, F. N., 333.
RUDOLF, R. D., 223.
RUGH, J. T., 78.
RUSSELL, MAJOR F. F., 662.

SAJOUS, C. E. DE M., 228.
SATTERTHWAITE, T. E., 129.
SOLIS-COHEN, SOLOMON, 705.
STEWART, F. E., 9, 83, 147, 526.

TAYLOR, J. MADISON, 274, 340, 395.

VANDERKLEED, C. E., 9, 83, 147.
VON COTZHAUSEN, LOUIS, 460.

WILCOX, R. W., 385.
WOHL, M. G., 29.
WOOD, H. C., JR., 326.

Names of Authors Quoted During the Year 1913

Aaron, C. D., 42, 283.
Abrams, Albert, 7, 393.
Abrahams, Robert, 544.
Albert, Henry, 733.
Alexander, I. H., and H. Montague, 677.
Allan, J., 359, 666.
Allen, A. R., 178.
Am Ende, C., 491.
Anderson, H. B., 641.
Apert, 614.
Archibald, Edward, and E. J. Mullally, 360.
Arnold, F. S., 479.
Arnold, H. L., 424.
Arnozan, M., and J. Carles, 304.
Artault, A., 366.
Atkey, Oliver, 556.
Aubertin, 418.

Babcock, W. Wayne, 659.
Baetjer, F. H., 744.
Boetzner, Wilhelm, 301.
Baird, Henry, 242.
Baldwin, Aslett, 109.
Ballenger, Edgar G., and Omar F. Elder, 357.
Bardswell, N. D., 363.
Barnes, Noble P., 1, 577.
Barnes, R. H., 677.
Bartholow, Paul, 453.
Barton, W. M., 557, 649, 722.
Baruch, Simon, 56.
Bassler, Anthony, 545.
Baughman, G., 488, 549.
Bayet, 115.
Bayley, H. W., 490.
Behrend, E. B., 429.
Beling, C. C., 291.
Benedict, A. L., 279, 354.
Benedikt, M., 242.
Bennett, W. C., 217.
Berghausen, Oscar, 295.
Bériel, L., and A. Devic, 36.
Billings, Frank, 293.
Binet, A., 480.
Bishop, L. F., 108, 499, 731.
Bispham, W. N., 552.
Blackford, J. M., and A. H. Sanford, 668.
Blackwood, J. D., Jr., 680.
Blosser, Ray, 174.
Boas, I., 351.
Bolten, G. C., 735.
Borchardt, M., Moszkowicz, and Frank, 348.
Bram, Israel, 47, 681.
Bressler, J., 489.
Brooks, Harlow, 679.
Brooks, Nathaniel P., 203.
Brown, J. S., 303.
Brown, S. H., 737.
Brun, 305.
Buckley, A. C., 425.
Bywaters, H. W., 555.

Cabot, Hugh, 237.
Cabot, R. C., 357.
Cahn, 179.
Callison, J. G., 57.
Carles, J., 304, 413.
Carnot, Paul, 475.
Certain, 299.
Chandler, Swithin, 539.
Chauvin and Œconomos, 553.
Chavasse, F. B., 287.
Cheney, W. F., 365.
Child, F. S., 731.
Chipman, E. D., 283.
Clock, R. O., 610.
Cmunt, 110.
Coates, G. M., 655.
Connolly, D. I., 239.
Corner, E. M., 414.
Cornwall, E. E., 175.
Cottenot, 612.
Craig, C. F., 367.
Cramp, W. C., 42.
Croissant, 57.
Culler, R. M., 348.
Cushing, Harvey, 299, 423.
Cushny, A. R., H. F. Marris, and M. D. Silberberg, 108.

Digitized by Google

Dalimier, R., and J. Jacquemar, 488.
D'Amico, V., 617.
Dardel, J., 236.
Dariaux, 612.
Davis, G. G., 41.
Davis, N. S., Jr., 548.
Day, H. B., 473.
Deaver, John B., 290.
De Courmelles, Foveau, 172.
Delherm, 365.
Denyer, S. E., 548.
Dercum, F. X., 321.
Devic, A., 36.
Dewaele, 237.
D'Œlsnitz, 674.
Dorrance, G. M., 606.
Durand, 481.

Ealcher, G., 286.
Eckels, L. S., 734.
Eggleston, Cary, and R. A. Hatcher, 347.
Einhorn, Max, 665, 736.
Eisenstaedt, J. E., 52.
Elder, Omar F., 357.
Elgin, W. F., 9, 83, 147.
Enriquez and Gutmann, 472.
Erdman, Bernard, 486.
Eustis, Allan, 663.
Evans, George H., 520.

Farnell, F. J., 549.
Fazio, F., 181.
Feiling, A., 673.
Field, C. E., 417.
Fishberg, Maurice, 180, 425, 487.
Fisher, Mulford K., 716.
Fitch, W. E., 123.
Flandin, C., 669.
Foote, John, 482.
Fordyce, J. A., 177.
Fradiss, S., 109.
Fraenkel, M., 740.
Frank, 348.
Frazer, Thompson, 111.
Freeburg, H. M., 292.
Friedenwald, Julius, and F. H. Baetjer, 744.
Freudenthal, G., 422.
Frick, A., 480.
Friedenwald, Julius, and T. F. Leitz, 329.

Gabriel, C., 678.
Gaisböck, F., 478.
Gallant, A. Ernest, 70.
Galliot, 35.
Gilbert, 173.
Gillmore, R. T., 554.
Giraud, 414.
Glässner, K., 669.
Gleason, E. B., 392.
Glénard, Roger, 671.
Goldstein, 613.
Goldstein, Hyman I., 336, 405.
Gompertz, Louis M., 139.
Gordon, Alfred, 193, 426.
Gordon, W. S., 119.
Gougerot, H., 615.
Gramme, 602.
Graul, 286.
Gray, T. N., 114.
Green, 556.
Greene, C. W., and T. K. Kruse, 546.
Griffith, F. Webb, 603.
Griffith, J. P. Crozer, 57, 110.
Grulee, C. G., 168.
Gunn, J. A., and F. B. Chavasse, 287.
Gutmann, 472.

Hahn, H., 416.
Hailperin, C. J., 609.
Hall, R. B., 744.
Halstead, T. H., 58.
Harper, W. W., 119.
Harrar, J. A., 676.
Harrington, A. W., and A. M. Kennedy, 414.
Harrison, V. W., 283.
Harrison, W. H., 428.
Harry, P. A., 612.
Hart, T. S., 45.
Hastings, T. W., 54.
Hatcher, R. A., 347.
Hays, Harold, 296.
Hazen, H. H., 423.
Hertzell, C., 678.
Hiden, H. S., 182.
Hinsberg, 418.
Hirano, T., 740.
Hirtz, 420.
Hirtz and Croissant, 57.
Hitchens, A. Parker, 9, 83, 147, 590.
Hodgson, A. J., 39.
Holt, E. E., 30, 89.
Horwitz, P., 234.
Houghton, J. W. H., 118.
Humphreys, G. A., 351.
Hunäns, 162.
Hunt, E. L., 615.

Jackson, A. B., 680.
Jacobs, Louis, 742.
Jacobson, Conrad, 423.
Jacquemar, J., 488.
Jager, F., 421.
James, W. M., 610.
Jarvis, George O., and Albert Abrams, 7.
Jeanselme, 229.
Jenkins, L. W., 112.
Jennings, W. B., 353.
Johnson, W. N., and C. C. Watt, Jr., 181.
Johnston, G. C., 734.
Jona, 553.
Jones, Glenn I., 111.
Jones, H. A., 163.
Jones, H. S., 635.
Jourdan, V. J. P., 270.
Juarros, 611.

Kahlo, G. L., 350.
Kahn, L. M., 671.
Keene, F. E., and J. L. Laird, 743.
Kehrer, E., 365.
Kellogg, E. L., 415.
Kelly, H. A., and J. C. Neel, 602.
Kennedy, A. M., 414.
King, A. C., 293.
King, A. F. A., 682.
Kiralyfi, G., 114.
Kolipinski, Louis, 398.
Koplik, Henry, 477.
Kosmak, G. W., 604.
Kruse, T. K., 546.
Krusen, Wilmer, 163.

Laborde, Jean, 118.
Laird, J. L., 743.
Lambert, Alexander, 485.
La Roque, G. P., 608.
Lees, D. B., 54.
Leitz, T. F., 329.
Lemere, H. B., 176.
Lemon, Ferguson, 674.
Lereboullet, Pierre, 179.
Leroide, J., 419.
Leslie, R. Murray, 736.
L'Esperance, O. R. T., and Hugh Cabot, 237.
Leubuscher, P., 348.
Levinson, Frank, 602.
Lévy, G., 239.
Levy, R., 472.
Libman, 40.
Liebmann, E., 108.
Liénard, 412.
Lippmann, A., 601.
Loeb, L., H. N. Lyon, C. B. McClurg, and W. O. Sweek, 285.
Lorand, A., 237, 412.
Lowenburg, H., 171.
Lyon, A. V., 59.
Lyons, W. C., 303.

McCombs, R. S., 44.
McConnell, Guthrie, 515.
McCready, E. B., 145.
McDonagh, J. E. R., 51.
McGavin, Lowrie, 417.
McGlinn, J. A., 135, 196.
McKenty, 729.
McLean, F. C., 172.
McMorrow, Frank, 421.

Macfarlan, Douglas, 732.
Magnus, 618.
Manning, W. J., 672.
Manning, W. S., 112.
Manoiloff, E., 300.
Marie, Pierre, and C. Chatelin, 38.
Marris, H. F., 108.
Martin, E. H., 421.
Marx, S., 741.
Mathieu and Giraud, 414.
Matthews, Justus, 663.
Maxwell, R. D., 733.
Mayo, C. H., 607.
Mayo, W. J., 668.
Mercer, A. C., 613.
Meyer, K. A., 484.
Meyer and Cahn, 179.
Miel, G. W., 165.

Digitized by Google

Milligan, E. T. C., 410.
Mills, H. Brooker, 458.
Mittendorf, W. K., 349.
Montague, H., 677.
Montgomery, C. M., 257.
Montgomery, D. W., 176.
Morgan, W. G., 169.
Morris, Sir Malcolm, 50.
Morris, R. T., 513.
Mortimer, J. D., 409.
Moszkowicz, 348.
Mullally, E. J., 360.
Müller, H., 670.
Mulot, O. L., 481.
Mummery, P. L., 668.
Musser, 740.

Naamé, 306.
Neel, J. C., 602.
Nelson, J. G., 165.
Nelson, R. M., 488.
Neuhof, S., 743.
Neuman, Lester, and E. B. Behrend, 429.
Niblett, W. S., 617.
Nobl, 673.
Noguchi, 420.
Norris, R. C., 49.

O'Connor, J. W., 240.
Œconomos, 553.
Oettinger, Bernard, 37.
Oliver, Sir Thomas, 737.
Orr, T. G., 619.
Osborne, Oliver T., 261, 727.
Oulmann, Ludwig, and J. L. Woltheim, 742.
Oxenham, H. B., 172.

Park, 413.
Pathault, 40.
Pedersen, V. C., 305.
Pemberton, Ralph, 45.
Percy, J. F., 234.
Petrilli, G. L., 673.
Pettit, R., 237.
Phillips, John, 294.
Phillips, W. D., 287.
Pilcher, J. T., 550.
Pitfield, R. L., 285.
Pitt, G. N., 492.
Pittenger, P. S., 9, 83, 147, 526.

Quackenbos, J. D., 597.

Randall, B. A., 491.
Rathery, F., and Liénard, 412.
Ravogli, A., 547.
Reynolds, C. B., 48.
Reynolds, John, and R. J. Reynolds, 284.
Riesman, David, 288.
Ritschl, 165.
Robin, Albert, 363.
Robinson, Beverley, 672.
Robinson, F. N., 333.
Roehr, C. G., 479.
Rosenow, E. W., 476.
Ross, G. C., and L. F. Stewart, 51.
Rudolf, R. D., 223.
Rugh, J. T., 78.
Russell, Major F. F., 662.
Ruttan, R. F., and R. H. M. Hardisty, 46.

Sajous, C. E. de M., 228.
Sanford, A. H., 668.
Saphir, J. F., 241.
Satterthwaite, T. E., 129.
Schäfer, E. A., 163, 551.
Schiffmann and Vystavel, 483.
Schreiber, 364.
Schreiber, E., 670.
Schumann, E. A., 735.
Scott, G. D., 174.
Seidelin, Harold, 605.
Sexton, 492.
Shalet, Louis, 745.
Shears, G. P., 242, 739.
Sheedy, B. de F., 427.
Sheffield, H. B., 676, 737.
Silberberg, M. D., 108.
Sill, E. M., 493.
Simmonds, 298.
Singer, Charles, 107.
Singer, Gustav, 475.
Skillern, P. G., 607.
Slade, C. B., 679.
Sobel, Jacob, 739.
Solis-Cohen, Meyer, 680.
Solis-Cohen, Solomon, 705.
Spindler, H., 411.
Staübl, C., 284.
Stevens, A. R., 676.
Stewart, D. H., 175.
Stewart, F. E., 9, 83, 147, 526.
Stewart, L. F., 51.
Stiven, H. E. S., 37.
Stucky, J. A., 297.
Suggett, O. L., 419.
Sutter, C. C., 366.
Swann, A. W., 164.

Taylor, H. L., 54.
Taylor, J. Madison, 274, 340, 395.
Taylor, W. J., 555.
Témoin, 740.
Theobald, Saml., 116.
Thomson, John, 664.
Thomson, St. Clair, 355.
Thrasher, J. R., and Bernard Erdman, 486.
Tinel, J., and J. Leroide, 419.
Tisserand, G., 295.
Tomlinson, W. H., 235.
Trapl, 423.
Tupper, P. C., 167.
Tuttle, G. H., 615.

Unger, 170.

Van der Bogert, F., 666.
Vanderkleed, C. E., 9, 83, 147.
Vanverts, 605.
Vaughan, G. T., 290.
Voight, I. C., 554.
Von Adelung, E., 300.
Von Cotzhausen, Louis, 460.
Von Noorden, Carl, 231, 346, 357.
Vystavel, 483.

Wade, B. N., 356.
Wallace, C., and F. S. Child, 731.
Walsh, J. J., 663.
Washburne, C. L., 670.
Waters, W. H., 682.
Watson, F. S., 430.
Watt, C. C., Jr., 181.
Waugh, W. F., 167.
Weaver, W. H., 116.
Webb, A. D. A., 364.
Wechselmann, W., 738.
Weed, L. H., Harvey Cushing, and Conrad Jacobson, 423.
Weiss, O., 296.
Wellman, Creighton, 114.
Welz, W. E., 675.
White, Joseph A., 240.
Whitehouse, B., 673.
Whitfield, Arthur, 173.
Wiki, B., 170.
Wilcox, R. W., 385.
Wilcox, W. H., 730.
Wilensky, A. O., 732.
Wilkie, D. P. D., 298.
Wohl, M. G., 29.
Wolbarst, A. L., 367, 473.
Wolf, H. F., 547.
Wollheim, J. L., 742.
Wood, H. C., Jr., 326.
Works, B. O., 117.

Young, 492.

Zahorsky, 48.
Zangemeister, W., 354.
Zimmern, Cottenot, and Dariaux, 612.

Original Articles

Aconite, effects of medicinal doses of, upon the pulse rate. R. D. Rudolf 223

Acute rheumatic fever, pathology and bacteriology of. Guthrie McConnell 515

Adalin: a sedative and hypnotic. Paul Bartholow 453

Adrenals and the blood-pressure in their relations to arteriosclerosis. C. E. de M. Sajous 228

Agar-agar, simple and rapid way of filtering. M. O. Wohl 29

Anesthesia, spinal, dangers and disadvantages of. W. Wayne Babcock 559

Digitized by Google

Antrum of Highmore, treatment of chronic suppuration of. E. B. Gleason 392
Application of some muscular tissues adapted to physiological standardization. F. E. Stewart and P. S. Pittenger 526
Appreciation of the teachings of Dr. Abrams. J. Madison Taylor 395
Arrhythmias, cardiac, notes on the differentiation of, and their treatment. T. E. Satterthwaite 129
Arterial hypertension, sodium nitrite in. W. H. Porter 65
Arteriosclerosis, adrenals and the blood-pressure in their relations to. C. E. de M. Sajous 228
Arteriosclerosis, treatment of. L. F. Bishop . 449
Asthma, report of a case of cat. H. C. Wood, Jr. 326
Bacteriology and pathology of acute rheumatic fever. Guthrie McConnell 515
Bubonic plague: its history and prevention. Victor J. P. Jourdan 270
California, climatic conditions in: their influence on the treatment of tuberculosis. G. H. Evans 520
Cancer, prevention and surgical treatment of. J. A. McGlinn 135, 198
Cardiac arrhythmias and their treatment, notes on the differentiation of. T. E. Satterthwaite 129
Cat asthma, report of a case of. H. C. Wood, Jr. 326
Chemotherapy, copper. W. M. Barton 649
Cholelithiasis, medical treatment of. H. B. Anderson 641
Chronic pleurisy, unrecognized pulmonary lesions in cases of. C. M. Montgomery .. 257
Suppuration of the antrum of Highmore, treatment of. E. B. Gleason 392
Climatic conditions in California: their influence on the treatment of tuberculosis. George H. Evans 520
Copper chemotherapy—with special reference to the double tartrate of copper oxide and sodium. Wilfred M. Barton .. 649, 722
Current developments and problems in vaccine therapy. A. Parker Hitchens 590
Dermatology, X-ray in. Mulford K. Fisher .. 716
Diabetes and pregnancy, treatment of. R. W. Wilcox 385
Diagnosis of suppuration of the labyrinth. George Morrison Coates 655
Differentiation of cardiac arrhythmias and their treatment. T. E. Satterthwaite . 129
Dioxydiamidoarsenobenzol, report of a case of filariasis treated with. N. P. Barnes .. 1
Diphtheria and sore throat. H. I. Goldstein 336, 405
Drug standardization. F. E. Stewart, with the collaboration of A. P. Hitchens, W. F. Elgin, C. E. Vanderkleed, and P. S. Pittenger 9, 83, 147
Ductless glands, interrelation of the nervous system and the. W. C. Bennett 217
Duodenal and gastric ulcer, effect of scarlet red in the treatment of. J. Friedenwald and T. F. Leitz 329
Medical treatment of. L. M. Gompertz . 139
Economics, physical. E. E. Hole 30, 89
Effects of medical doses of aconite upon the pulse rate. R. D. Rudolf 223
Effects of oil of orange on the nasal mucosa, experiment to test the. G. O. Jarvis and Albert Abrams 7
Of scarlet red in the treatment of gastric and duodenal ulcer. Julius Friedenwald and T. F. Leitz 329
Electric and other drugless treatments of locomotor ataxia. Louis von Cotzhausen .. 460
Experiment to test the effect of oil of orange on the nasal mucosa. George O. Jarvis and Albert Abrams 7
Filariasis; report of case treated with dioxydiamidoarsenobenzol. Noble P. Barnes . 1
Gastric and duodenal ulcer, effect of scarlet red in treatment of. J. Friedenwald and T. F. Leitz 329
Medical treatment of. L. M. Gompertz . 139
Gastrointestinal symptoms of diseases other than gastrointestinal. H. Brooker Mills . 458
Gonorrhea in the female. Swithin Chandler . 539
Hygiene, reconstructive personal. J. Madison Taylor 274, 340
Hypertension, arterial, sodium nitrite in. W. H. Porter 65
Hyposecretion of the thyroid, some common types of. O. T. Osborne 261
Interrelation of the nervous system and the ductless glands. W. C. Bennett 217
Juvenile delinquency. E. Bosworth McCready . 145
Labyrinth, suppuration of: diagnosis. G. M. Coates 655
Lobar and lobular pneumonia, recent improvements in the quinine treatment of. S. Solis-Cohen 705
Locomotor ataxia, electric and other drugless treatments of. Louis von Cotzhausen . 460
Medical treatment of cholelithiasis. H. B. Anderson 641
Of gastric and duodenal ulcer. Louis M. Gompertz 139
Medicinal doses of aconite, effects of, upon the pulse rate. R. D. Rudolf 223
Mental suggestion, present status of. J. D. Quackenbos 597
Mercury and sulphur internally in the treatment of pneumonias. Louis Kolipinski . 398
Mine sanitation. Nathaniel P. Brooks 208
Modern methods of drug standardization. F. E. Stewart, with the collaboration of A. Parker Hitchens, W. F. Elgin, Chas. E. Vanderkleed, and P. S. Pittenger . 9, 83, 147
Muscular tissues adapted to physiological standardization, application of some. F. E. Stewart and P. S. Pittenger 526
Myatonia congenita. Alfred Gordon 193
Nasal mucosa, experiment to test the effect of oil of orange on. G. O. Jarvis and Albert Abrams 7
Nervous symptoms of pelvic disease. F. X. Dercum 321
System and the ductless glands, interrelation of the. W. C. Bennett 217
Notes on the differentiation of cardiac arrhythmias and their treatment, with a new time-marker. Thomas E. Satterthwaite . 129
Oil of orange on the nasal mucosa, experiment to test the effect of. G. O. Jarvis and Albert Abrams 7
Pathology and bacteriology of acute rheumatic fever. Guthrie McConnell 515
Pelvic disease, nervous symptoms of. F. X. Dercum 321
Peritoneal adhesions, some newer notes on the subject of. R. T. Morris 513
Personal hygiene, reconstructive. J. Madison Taylor 274, 340
Pharmacopœia, absurdities and commercialism of the proposed ninth decennial revision of the United States. O. T. Osborne .. 727
Philadelphia medical schools adopt a higher standard 162
Physical economics. Erastus Eugene Holt . 30, 89
Plague, bubonic: its history and prevention. V. J. P. Jourdan 270
Pleurisy, chronic, unrecognized pulmonary lesions in cases of suspected. C. M. Montgomery 257

Digitized by Google

Pneumonia, lobar and lobular, recent improvements in the quinine treatment of. S. Solis-Cohen 705
Pneumonias, treatment of, with mercury and sulphur internally. Louis Kolipinski .. 398
Pott's disease, treatment of, by bone grafting (Albee's operation). J. Torrance Rugh . 78
Pregnancy and diabetes, treatment of. R. W. Wilcox 385
Present status of mental suggestion. John D. Quackenbos 597
President's address. Noble P. Barnes 577
Prevention and surgical treatment of cancer. John A. McGlinn 135, 198
Pulmonary lesions in cases of suspected chronic pleurisy, unrecognized. C. M. Montgomery 257
Syphilis complicating pulmonary tuberculosis: its diagnosis, treatment, and prognosis. Frank Neall Robinson 333
Tuberculosis, pulmonary syphilis complicating. F. N. Robinson 333
Pulse rate, effects of medicinal doses of aconite upon the. E. D. Rudolf 223
Quinine treatment of lobar and lobular pneumonia, recent improvements in. S. Solis-Cohen 705
Recent improvements in the quinine treatment of lobar and lobular pneumonia. Solomon Solis-Cohen 705
Reconstructive personal hygiene: the curative force of expert regulation of conduct. J. Madison Taylor 274, 340
Report of a case of cat asthma. Horatio C. Wood, Jr. 326
Rheumatic fever, acute, pathology and bacteriology of. Guthrie McConnell 515
Sacroiliac relaxation after operation, labor, etc., therapeutics of. A. E. Gallant .. 70
Scarlet red in the treatment of gastric and duodenal ulcer, effect of. J. Friedenwald and T. F. Leitz 329
Simple and rapid way of filtering agar-agar. Michael G. Wohl 29
Sodium nitrite in arterial hypertension. William Henry Porter 65
Some common types of hyposecretion of the thyroid. Oliver T. Osborne 261
New things in spondylotherapy. Albert Abrams 393
Newer notes on the subject of peritoneal adhesions. Robert T. Morris 513
Sore throat and diphtheria. Hyman I. Goldstein 336, 405
Spinal anesthesia, dangers and disadvantages of. W. Wayne Babcock 659
Spondylitis, treatment of, by bone grafting (Albee's operation). J. Torrance Rugh . 78
Spondylotherapy, some new things in. Albert Abrams 393
Standardization, modern methods of drug. F. E. Stewart, with the collaboration of A. P. Hitchens, W. F. Elgin, C. E. Vanderkleed, and P. S. Pittenger . 9, 83, 147
Sulphur and mercury internally in the treatment of pneumonias. Louis Kolipinski . 398
Suppuration of the antrum of Highmore, chronic; treatment of. E. B. Gleason . 392
Of the labyrinth, diagnosis of. G. M. Coates . 655
Surgical treatment of cancer, prevention and. J. A. McGlinn 135, 198
Syphilis, pulmonary, complicating pulmonary tuberculosis. F. N. Robinson 333
Teachings of Dr. Abrams, an appreciation of the. J. Madison Taylor 395
Therapeutics of sacroiliac relaxation after operation, labor, etc. A. Ernest Gallant . 70
Throat, sore, and diphtheria. H. I. Goldstein . 336
Thyroid, hyposecretion of, some common types of. O. T. Osborne 261
Treatment of arteriosclerosis. Louis Faugeres Bishop 449
Of cancer, surgical. J. A. McGlinn 135, 198
Of chronic suppuration of the antrum of Highmore (with exhibition of a new instrument). E. B. Gleason 392
Of diabetes and pregnancy. Reynold Webb Wilcox 385
Of gastric and duodenal ulcer, effects of scarlet red in. J. Friedenwald and T. F. Leitz 329
Of lobar and lobular pneumonia, recent improvements in the quinine. S. Solis-Cohen 705
Of pneumonias with mercury and sulphur internally. Louis Kolipinski 398
Of spondylitis (Pott's disease) by bone grafting (Albee's operation), with report of eight cases. J. Torrance Rugh . 78
Of tuberculosis, climatic conditions in California: their influence on the. G. H. Evans 520
Tuberculosis, climatic conditions in California: their influence on the treatment of. G. H. Evans 520
Pulmonary; pulmonary syphilis complicating. F. N. Robinson 333
Tuberculous patient, what does treatment offer to the advanced? F. M. Pottenger 583
United States Pharmacopœia, absurdities and commercialism of the proposed ninth decennial revision of the. Oliver T. Osborne 727
Unrecognized pulmonary lesions in cases of suspected chronic pleurisy. Charles M. Montgomery 257
Vaccine therapy, current developments and problems in. A. Parker Hitchens 590
What does treatment offer to the advanced tuberculous patient? Francis Marion Pottenger 583
X-ray in dermatology. Mulford K. Fisher .. 716

Announcements

American Medical Editors' Association 315
American Proctologic Society 315
American Therapeutic Society—1914 meeting .. 764
Letter concerning diabetes mellitus. William E. Fitch 123
Testimonial banquet to Dr. William J. Robinson 250

Digitized by Google

General Index

Abdominal rigidity during anesthesia. J. D. Mortimer 409
Abortion, treatment of. V. W. Harrison 282
Abscess, acute retropharyngeal. I. H. Alexander and H. Montague 677
Abscesses, fixation. J. Carles 413
Absorption of quinine, rate of. A. D. A. Webb. 364
Absurdities and commercialism of the proposed ninth decennial revision of the United States Pharmacopœia. By Oliver T. Osborne 727
Accessory sinuses in intraocular inflammation, treatment of. W. S. Manning 112
Acidosis, index of. T. S. Hart 45
Two types of. Allan Eustis 663
Acne, indurated, treatment of. C. J. Hailperin 609
Treatment of. E. D. Chipman 283
Aconite, effects of medicinal doses of, upon the pulse rate. R. D. Rudolf 223
Acromegaly following panhysterectomy. Goldstein 613
Acromion process, auscultation at the. Robert Abrahams 544
Actinomycosis, study of. McKenty 729
X-ray treatment in. R. Levy 472
Action of epinephrin on veins. J. A. Gunn and F. B. Chavasse 287
Of extract of exophthalmic goiter on blood-pressure. J. M. Blackford and A. H. Sanford 668
Acute Addison's disease. A. Lippmann 601
Appendicitis in children, treatment of. H. E. S. Stiven 37
Gonorrhea, new treatment for. O. L. Mulot . 481
Nephritis in children, proctoclysis in. H. Lowenburg 171
Treatment of. Carl von Noorden 231
Retropharyngeal abscess. I. H. Alexander and H. Montague 677
Rheumatic fever, pathology and bacteriology of. Guthrie McConnell 515
Sinus suppuration, treatment of. H. B. Lemere 176
Toxic nephritis, renal decapsulation in. G. Tisserand 295
Adalin: a sedative and hypnotic. Paul Bartholow 453
Addison's disease, acute. A. Lippmann 601
Administration of neosalvarsan. O. L. Suggett 419
J. R. Thrasher and Bernard Erdman 486
Of oxygen to the fetus. G. P. Shears 739
Of pituitary extract, continuous. Musser .. 740
Of salvarsan and neosalvarsan by enteroclysis. Ludwig Oulmann and J. L. Wollheim 742
In syphilis. J. A. Fordyce 177
Adrenal insufficiency, partial chronic, in children. D'Œlsnitz 674
Adrenals and the blood-pressure in their relations to arteriosclerosis. C. E. de M. Sajous 228
Agar-agar, simple and rapid way of filtering. M. O. Wohl 29
Albumin in sputum in pulmonary tuberculosis. B. O. Works 117
Albuminuria in childhood, treatment of. Galliot 35
Alcohol, effects of, when injected into nerves. L. Bériel and A. Devic 36
Alcoholism, treatment of. H. S. Jones 635
Alkalies and hyperchlorhydria. P. C. Tupper . 167
Anemia, treatment of. W. H. Wilcox 730
Anesthesia, abdominal rigidity during. J. D. Mortimer 409
General, with ethyl chloride. Vanverts 605
Intravenous ether-salt solution. L. W. Jenkins 112
Local, in operations upon rectum. J. F. Saphir 241
Spinal. J. W. H. Houghton 118
Dangers and disadvantages of. W. Wayne Babcock 659
Anesthetic, local, action of magnesium sulphate. B. Wiki 170
Anesthetics, new local. Unger 170
Antiarthralgic and antineuralgic action of epinephrin. F. Gaisböck 478
Antistreptococcic serum used in meningitis. Juarros 611
Antitoxin administration in diphtheria. Park . 413
Antityphoid inoculation. Major F. F. Russell 662
Antrum of Highmore, treatment of chronic suppuration of. E. B. Gleason 392
Anus, fissured, treatment of. Aslett Baldwin . 109
Apparatus for proctoclysis. G. H. Tuttle 615
Appendicitis, chronic, diagnosis of. Anthony Bassler 545
Sign indicative of. C. D. Aaron 283
With gastric symptoms. Charles Singer .. 107
In children, treatment of acute. H. E. S. Stiven 37
Typhoid. F. Fazio 181
Appendicular sciatica. Enriquez and Gutmann 472
Application of some muscular tissues adapted to physiological standardization. F. E. Stewart and P. S. Pittenger 526
Appreciation of the teachings of Dr. Abrams. J. Madison Taylor 395
Arrest of hemorrhage from bone. G. T. Vaughan 290
Arrhythmias, cardiac, notes on the differentiation of, and their treatment. T. E. Satterthwaite 129
Arsenic, permeability of meninges to. J. Tinel and J. Leroide 419
Arterial hypertension, sodium nitrite in. W. H. Porter 65
Arteriosclerosis, adrenals and the blood-pressure in their relations to. C. E. de M. Sajous 228
Cause and prevention of. Louis Faugeres Bishop 731
Stasis reaction in. C. Bertzell 678
Treatment of. Carl von Noorden 346
L. F. Bishop 449
Arthritis, pituitary extract in rheumatic. C. Wallace and F. S. Child 731
Asphyxia of newborn, use of mucus extractor in. H. B. Oxenham 172
Asthma, report of a case of cat. H. C. Wood, Jr. 326
Treatment of. Justus Matthews 663
Of uncomplicated. Bernard Oettinger 37
Bronchial, organotherapy in. O. Weiss 296
Theobromine sodium salicylate in. Meyer and Cahn 179
Treatment of. C. Staübli 284
Atrophic rhinitis, treatment of. Douglas Macfarlan 732
And ozena, treatment of. Louis Jacobs ... 742
Atrophy of infants, treatment of. John Foote . 483
Aural and ophthalmic work, scarlet red in. J. Allan 359
Auscultation at the acromion process. Robert Abrahams 544
Autoplastic ovarian grafting. B. Whitehouse . 673
Autoserotherapy in serofibrinous pleurisy. Maurice Fishberg 425

Bacterial endocarditis, lesions of subacute. Libman 40
Bacterin treatment of pertussis. John Zahorsky 48

Digitized by Google

Bacteriology and pathology of acute rheumatic fever. Guthrie McConnell 515
Benzol treatment of leukemia. G. Kiralyfi ... 114
Aubertin 418
Beta-imidazolylethylamine in obstetrics. F. Jager 421
Bile in treatment of gastric hyperacidity. K. Glässner 669
Biliary affections, hexamethylenamine in. G. P. La Roque 608
Bismuth in gastric and duodenal ulcers. C. D. Aaron 42
Blood and cerebrospinal fluid in mumps. A. Feiling 673
Occult, new reagent for detecting. R. F. Ruttan and R. H. M. Hardisty 46
Viscosity, gelatin and. Cmunt 110
Blood-pressure, action of extract of exophthalmic goiter on. J. M. Blackford and A. H. Sanford 668
Boils, carbuncles, and pyogenic infections, sulphuric acid in treatment of. John Reynolds and R. J. Reynolds 284
Bone, hemorrhage from, arrest of. G. T. Vaughan 290
Bone-marrow metastases and anemia in gastric cancer. A. W. Harrington and A. M. Kennedy 414

Book Reviews:—
Appendicitis. John B. Deaver 635
The Blood of the Fathers. G. Frank Lydston 508
Blood-pressure from the Clinical Standpoint. Francis Ashley Faught 765
A Course in Normal Histology. Rudolf Krause. Translation by Philipp. J. R. Schmall 699
Diseases of the Eye. George E. de Schweinitz 700
Diseases of the Mouth. F. Zinsser. Translated and Edited by John Bethune Stein 250
Diseases of the Stomach, Intestines, and Pancreas. Robert Coleman Kemp 60
An Essay on Hasheesh, Including Observations and Experiments. Victor Robinson 124
Genitourinary Diseases and Syphilis. Henry M. Morton 187
Guide to Midwifery. David Berry Hart 316
Handbuch der Pathologie des Harnes. F. Blumenthal 508
How to Collect a Doctor Bill. Frank P. Davis 508
Hygiene and Sanitation. George M. Price ... 765
Insomnia; Its Cause and Treatment. Sir James Sawyer 123
The Labyrinth. Alfred Braun and Isidore Friesner 636
Lang's German-English Dictionary of Terms Used in Medicine and the Allied Sciences. Milton K. Meyers 380
Leitfaden der Ersten Hilfe (Manual of First Aid). J. Lamberg 444
Massage, Manual Treatment, Remedial Movements. Douglas Graham 700
Medical Men and the Law. Hugh Emmet Culbertson 251
The Narcotic Drug Diseases and Allied Ailments. By George E. Pettey 764
New Pocket Medical Formulary (with an Appendix). William Edward Fitch 444
The Operating Room and the Patient. Russell S. Fowler 316
Pathfinders in Medicine. Victor Robinson .. 700
Pathology and Treatment of Diseases of Women. A. Martin and Ph. Jung; English Translation by Henry Schmitz ... 188
Pharmacology. Action and Uses of Drugs. Maurice Vejux Tyrode 124
Le Post-partum Normal. Prof. Constantin Daniel 443
Safeguarding the Special Senses. Henry O. Reik 250
Sexual Impotence. Victor G. Vecki 251

Book Reviews (concluded):—
Solidified Carbon Dioxide in Cutaneous Neoplasms and Other Skin Diseases. Ralph Bernstein 444
Surgery of the Brain and Spinal Cord. Fedor Krause. English Adaptation by Max Thorek 252
Surgical Operations. A Handbook for Students and Practitioners. Friedrich Pels-Leusden. English Translation by Faxton E. Gardner 60
Textbook of Alkaloidal Therapeutics. W. F. Waugh and W. C. Abbott 251
Textbook of General and Special Pathology. Henry T. Brooks 379
A Textbook of Human Physiology. Albert P. Brubaker 380
Textbook of Ophthalmology. Paul Roemer. Translated by Matthias Lanckton Foster 252
Therapeutics of the Gastrointestinal Tract. Carl Wegele. Translated and Edited by Maurice H. Gross and I. W. Held 764
The Therapy of Syphilis, Its Development and Present Position. Paul Mulzer ... 124
Traite International de Psychologie Pathologique. Edited by A. Marie 315
The Treatment of Shortsight. J. Hirschberg. Translated by G. Lindsay Johnson 188
Ueber die Pathogenese der Salvarsantodesfälle. Wilhelm Wechselmann 380

Bowel obstruction, therapeutic resource in hernia and other. W. F. Waugh 167
Bromides, circulatory effects of. C. W. Greene and T. K. Kruse 546
Bromine and quinine, hypersensitiveness to. E. Manolioff 300
Bronchial asthma, organotherapy in. O. Weiss 296
Theobromine sodium salicylate in. Meyer and Cahn 179
Treatment of. C. Stafibli 284
Bronchitis, chronic, treatment of. J. J. Walsh 663
Bubonic plague: its history and prevention. Victor J. P. Jourdan 270
Burns, treatment of. E. T. C. Milligan 410
Frank Levinson 602

California, climatic conditions in: their influence on the treatment of tuberculosis. G. H. Evans 520
Calomel, a peculiar case of poisoning by. H. Spindler 411
Camphor, effects of, on lesser circulation. E. Liebmann 108
Camphorated oil in pneumococcic pulmonary affections. Certain 299
Cancer, prevention and surgical treatment of. J. A. McGlinn 198
Silicic acid in. M. Benedikt 242
Gastric, bone-marrow metastases and anemia in. A. W. Harrington and A. M. Kennedy 414
Surgery of. W. J. Mayo 668
Uterine, diagnosis of. R. B. Hall 744
Carbohydrate metabolism, pituitary body and. Lewis H. Weed, Harvey Cushing, and Conrad Jacobson 423
Carbuncles, boils, and pyogenic infections, sulphuric acid in treatment of. John Reynolds and R. J. Reynolds 284
Carcinoma and papilloma, vesical. F. S. Watson 430
Colloidal copper in. Leo Loeb, H. N. Lyon, C. B. McClurg, and W. O. Sweek 285
Esophageal, treatment of. S. Fradiss 109
Gastric and pancreatic, relationship between. E. A. Schumann 735
Of the prostate. A. L. Wolbarst 473
Of the uterine cervix, treatment of. Howard A. Kelly and J. Craig Neel 602
Of the uterus, a rational method of treatment of. James F. Percy 234

Digitized by Google

Cardiac arrhythmias and their treatment, notes on the differentiation of. T. E. Satterthwaite 129
Involvement in syphilis. Harlow Brooks .. 679
Cardiovascular disease, diet in. L. F. Bishop 108
Case of veronal poisoning. G. N. Pitt 492
Cat asthma, report of a case of. H. C. Wood, Jr. 326
Cause and prevention of arteriosclerosis. L. F. Bishop 731
Central nervous system, examination of cerebrospinal fluid in disease of. Oscar Berghausen 295
Spirochæta pallida in the. Noguchi 420
Cerebrospinal fluid and blood in mumps. A. Felling 673
In disease of central nervous system, examination of. Oscar Berghausen 295
Chemotherapy, copper. W. M. Barton 649, 722
Cholelithiasis, medical treatment of. H. B. Anderson 641
Simple method of treating. Gramme 602
Chorea, salvarsan in. Pierre Marie and Chatelin 38
Chronic and subacute pancreatitis, diagnosis and treatment of. Edward Archibald and E. J. Mullally 360
Adrenal insufficiency in children, partial. D'Œlsnitz 674
Appendicitis, diagnosis of. Anthony Bassler 545
Sign indicative of. C. D. Aaron 283
With gastric symptoms. Charles Singer .. 107
Bronchitis, treatment of. J. J. Walsh 663
Catarrhal otitis media, treatment of. Harold Hays 296
J. A. Stucky 297
Digestive disturbances and enuresis. F. Van der Bogert 666
Joint disease, treatment of. Ralph Pemberton 45
Nephritis, treatment of. Carl von Noorden . 357
Pelvic inflammations. Frank McMorrow .. 421
Pleurisy, unrecognized pulmonary lesions in cases of. C. M. Montgomery 257
Suppuration of the antrum of Highmore, treatment of. E. B. Gleason 392
Circulatory effects of bromides. C. W. Greene and T. K. Kruse 546
Cirrhosis, hepatic, duodenal alimentation in. Max Einhorn 736
Treatment of. N. S. Davis, Jr. 548
Climatic conditions in California: their influence on the treatment of tuberculosis. George H. Evans 520
Codliver oil in marasmus, topical use of. T. N. Gray 114
Colles's fracture, treatment of. A. O. Wilensky 732
Colloidal copper in carcinoma. Leo Loeb, H. N. Lyon, C. B. McClurg, and W. O. Sweek 285
Colon bacillus infection of urinary tract in children. John Thomson 664
Congenital dislocation of hip, treatment of. C. L. Washburne 670
Constipation in infantile gastrointestinal disturbance. H. M. Freeburg 292
Continuous administration of pituitary extract. Musser 740
Contracted pelvis, procedure for facilitating delivery in. G. Freudenthal 422
Contraction of palmar fascia and thyroid treatment. Gilbert 173
Contradictory findings in Wassermann test. A. L. Wolbarst 367
Copper chemotherapy—with special reference to the double tartrate of copper oxide and sodium. Wilfred M. Barton 649, 722
Corpus luteum organotherapy. Wilmer Krusen 162
Cough in pulmonary tuberculosis, treatment of. Albert Robin 362
J. D. Blackwood, Jr. 680
W. S. Gordon 119
Creosote carbonate in pediatrics, uses of. Hunäns 162
In tuberculosis, use of. Maurice Fishberg . 180
Cure of talipes equinovarus at birth. A. R. Allen 178
Current developments and problems in vaccine therapy. A. Parker Hitchens 590
Cystitis in women, treatment of. F. Webb Griffith 603

Dangers and complications of salvarsan treatment. H. W. Bayly 490
And disadvantages of spinal anesthesia. W. Wayne Babcock 659
Death after injection of neosalvarsan. G. Lévy 239
Delivery in contracted pelvis, procedure for facilitating. G. Freudenthal 422
Dermatitis, rhus, prophylaxis and treatment of. E. von Adelung 300
Dermatology, X-ray in. Mulford K. Fisher .. 716
Desiccation as a therapeutic measure. R. L. Pitfield 285
Diabetes and pregnancy, treatment of. R. W. Wilcox 285
Insipidus, pituitary body and. Simmonds .. 298
Mellitus, diet in. Graul 286
Effects of nitrogen feeding on carbohydrate assimilation in. F. Rathery and Liénard 412
In the elderly, treatment of. A. Lorand .. 412
Lactic acid bacilli in treatment of. P. Horwitz 234
Treatment of. A. J. Hodgson 39
Diagnosis and treatment of incipient pulmonary tuberculosis. D. B. Lees 54
Of subacute and chronic pancreatitis. Edward Archibald and E. J. Mullally ... 360
Of tuberculosis. C. Am Ende 491
Of chronic appendicitis. Anthony Bassler ... 545
Of fetal presentation and position. W. D. Phillips 287
Of kidney inflammation. F. M. Pottenger . 418
Of measles. H. B. Sheffield 737
Of suppuration of the labyrinth. George Morrison Coates 655
Of tuberculosis of the kidney. F. E. Keene and J. L. Laird 743
Of ulcer of stomach and duodenum, X-ray. Julius Friedenwald and F. H. Baetjer . 744
Of uterine cancer. R. B. Hall 744
Diarrhea, infantile, treatment of. H. B. Day 473
R. O. Clock 610
Epidemic, treatment of. John Allan 666
Diet in cardiovascular disease. L. F. Bishop . 108
In diabetes mellitus. Graul 286
In treatment of sciatica. E. L. Hunt 615
Dietetic treatment of ileocolitis. C. G. Grulee . 168
Differential diagnosis of rachitis and tuberculous peritonitis. H. B. Sheffield ... 676
Differentiation between disorders of the two lobes of pituitary body. Harvey Cushing 299
Of cardiac arrhythmias and their treatment. T. E. Satterthwaite 129
Digestive disturbances, chronic, and enuresis. F. Van der Bogert 666
Digitalis bodies, emetic action of. Cary Eggleston and Robert A. Hatcher 347
Therapeutic action of. A. R. Cushny, H. F. Marris, and M. D. Silberberg 108
Dioxydiamidoarsenobenzol, report of a case of filariasis treated with. N. P. Barnes ... 1
Diphtheria and sore throat. H. I. Goldstein 336, 405
Antitoxin administration in. Park 413
Carriers, treatment of. Henry Albert 733
Disease of the central nervous system, examination of cerebrospinal fluid in. Oscar Berghausen 295

Digitized by Google

Dislocation of hip, congenital, treatment of. C. L. Washburne 670
Sprain fracture an essential to occurrence of. G. C. Ross and L. F. Stewart 51
Disorders of the two lobes of the pituitary body, differentiation between. Harvey Cushing 299
Drug standardization. F. E. Stewart, with the collaboration of A. P. Hitchens, W. F. Elgin, C. E. Vanderkleed, and P. S. Pittenger 9, 83, 147
Ductless glands, effects of, upon growth and metabolism. E. A. Schäfer 163
Interrelation of the nervous system and the. W. C. Bennett 217
Duodenal alimentation in hepatic cirrhosis. Max Einhorn 736
And gastric ulcers, bismuth in. C. D. Aaron 42
Effect of scarlet red in the treatment of. J. Friedenwald and T. F. Leitz 329
Medical treatment of. L. M. Gompertz . 139
Ulcer, treatment of. Max Einhorn 665
Duodenum and stomach, ulcer of, X-ray diagnosis of. Julius Friedenwald and F. H. Baetjer 744
Dyschezia and torpor recti. Gustav Singer .. 475
Dysentery in institutions, treatment of. Henry A. Jones 163
Dysphagia in tuberculous laryngitis, relief of. Hinsberg 418

Early puberty and pineal tumor. Apert 614
Eclampsia, treatment of puerperal. G. Ealcher 286
G. W. Kosmak 604
Economics, physical. E. E. Holt 30, 89
Ectopic gestation. R. D. Maxwell 733
Eczema, treatment of. A. Ravogli 547
Edema, local treatment of. Pathault 40
Paul Carnot 475
Effects of alcohol when injected into nerves. L. Bériel and A. Devic 36
Of camphor on lesser circulation. E. Liebmann 108
Of drugs on intestinal motility. Roger Glénard 671
Of ductless glands upon growth and metabolism. E. A. Schäfer 163
Of medicinal doses of aconite upon the pulse rate. R. D. Rudolf 223
Of nitrogen feeding on carbohydrate assimilation in diabetes mellitus. J. Rathery and Liénard 412
Of oil of orange on the nasal mucosa, experiment to test the. G. O. Jarvis and Albert Abrams 7
Of organic arsenicals on oxyhemoglobin. R. Dalimier and J. Jacquemar 488
Of pyramidon in typhoid fever. Hirtz and Croissant 57
Of scarlet red in the treatment of gastric and duodenal ulcer. Julius Friedenwald and T. F. Leitz 329
Electric and other drugless treatment of locomotor ataxia. Louis von Cotzhausen . 460
Emetic action of digitalis bodies. Cary Eggleston and Robert A. Hatcher 347
Emetine in hemoptysis. C. Flandin 669
Endocarditis, bacterial, lesions of subacute. Libman 40
Infectious. E. W. Rosenow 476
Enuresis and chronic digestive disturbances. F. Van der Bogert 666
Epidemic diarrhea of infants, treatment of. John Allan 666
Meningitis in young children. Henry Koplik 477
Epididymitis, gonorrheal. R. M. Culler 348
Treatment of. L. S. Eckels 734
Epilepsy, phosphorus in. P. Leubuscher ... 348
Pituitary in. G. C. Johnston 734
Treatment of idiopathic. G. C. Bolten 735
Epinephrin, action of, on veins. J. A. Gunn and F. B. Chavasse 287
Antiarthralgic and antineuralgic action of. F. Gaisböck 478
In treatment of urticaria. A. W. Swann ... 164
Epistaxis, simple method of arresting. Ritschl 165
Epithelioma, treatment of, by ethyl chloride. Harold Seidelin 605
Erysipelas, treatment of. F. S. Arnold 479
Esophageal carcinoma, treatment of. S. Fradiss 109
Ether in treatment of peritoneal infection. Témoin 740
Ether-salt solution anesthesia, intravenous. L. W. Jenkins 112
Ethyl chloride, general anesthesia with. Vanverts 605
In treatment of epithelioma. Harold Seidelin 605
Etiology of pernicious anemia. J. T. Pilcher . 550
Examination of cerebrospinal fluid in disease of central nervous system. Oscar Berghausen 295
Exophthalmic goiters, action of extract of, on blood-pressure. J. M. Blackford and A. H. Sanford 668
Experiment to test the effect of oil of orange on the nasal mucosa. George O. Jarvis and Albert Abrams 7
Extermination of pediculi capitis, rapid. Arthur Whitfield 173
External use of water for enhancing resistance in tuberculosis. Simon Baruch .. 56
Extract of exophthalmic goiter, action of, on blood-pressure. J. M. Blackford and A. H. Sanford 668

Faucial tonsil, indications for removal of. W. H. Tomlinson 235
Felons, treatment of. G. M. Dorrance 606
Fetal presentation and position, diagnosis of. W. D. Phillips 287
Filariasis; report of case treated with dioxydiamidoarsenobenzol. Noble P. Barnes . 1
Filigree implantation in hernia, results in. Lawrie McGavin 417
Fissured anus, treatment of. Aslett Baldwin . 109
Fistula in ano, treatment of. P. L. Mummery. 668
Rectal, new operation for. R. H. Barnes ... 677
Treatment of. C. G. Roehr 479
Fixation abscesses. J. Carles 413
Foot, gangrene of: treatment. M. Borchardt, Moszkowicz, and Frank 348
Forearm, fractures of: treatment. G. W. Miel 165
Fractures and wounds, suggestions on treatment of. W. W. Harper 119
Colles's treatment of. A. O. Wilensky 732
Of forearm, treatment of. G. W. Miel 165
Of hip, treatment of intracapsular. Gwilym G. Davis 41
Spontaneous, as an early symptom of tabes dorsalis. H. L. Taylor 54
Functional psychoses of senile period. A. C. Buckley 425
Functions of pituitary body. E. A. Schäfer . 551
Furuncles, treatment of. P. G. Skillern 607

Gangrene of the foot, treatment of. M. Borchardt, Moszkowicz, and Frank 348
Gas-bacillus infection, treatment of. Walter C. Cramp 42
Gastric affections, use of sodium bicarbonate in. A. Binet 480
And duodenal ulcers, bismuth in. Chas. D. Aaron 42
Effect of scarlet red in treatment of. J. Friedenwald and T. R. Leitz 329
Medical treatment of. L. M. Gompertz . 139
And pancreatic carcinoma, relationship between. E. A. Schumann 735

Digitized by Google

Cancer, bone-marrow metastases and anemia in. A. W. Harrington and A. M. Kennedy 414
Surgery of. W. J. Mayo 668
Dilatation, treatment of. A. Frick 480
Disturbances in tabes dorsalis. W. F. Cheney 365
Hyperacidity, bile in treatment of. K. Glässner 669
Ulcer, treatment of. J. Garnett Nelson 165
Treatment of. Mathieu and Giraud 414
Of perforated. E. M. Corner 414
Gastrointestinal disturbances, infantile constipation in. H. M. Freeburg 292
Hemorrhage, treatment of. I. Boas 351
Symptoms of diseases other than gastrointestinal. H. Brooker Mills 458
Gastroptosis, treatment of. E. L. Kellogg .. 415
Gelatin and blood viscosity. Cmunt 110
And olive oil in typhoid fever. Israel Bram. 681
Gelsemium in pellagra. Roy Blosser 174
General anesthesia with ethyl chloride. Vanverts 605
Paralysis, urethritis in, and its treatment. Henry Baird 242
Gestation, ectopic. R. D. Maxwell 733
Glucose, postanesthetic administration of. Chauvin and Œconomos 553
Goiter, treatment of. C. H. Mayo 607
Gonococcal urethritis in the male: treatment. V. C. Pedersen 305
Gonorrhea in the female. Swithin Chandler . 539
New treatment for acute. O. L. Mulot 481
Gonorrheal epididymitis. R. M. Culler 348
Ophthalmia: treatment with gonococcus vaccines. W. K. Mittendorf 349
Rheumatism, massage in. H. F. Wolf 547
Treatment of. J. Dardel 236
Gout, treatment of. G. L. Kahlo 350
Grape-sugar in the treatment of wounds. Magnus 618
Growth and metabolism, effects of ductless glands upon. E. A. Schäfer 163
Gunshot wounds, treatment of. F. Griffith ... 110
Gynecology and obstetrics, pituitary extract in. S. Marx 741

Headache, indurative, and its treatment. C. C. Beling 291
Treatment of. A. Lorand 237
Heart disease, use of sugar in. S. E. Denyer. 548
High pressure hypertrophy of. David Riesman 288
Hemophilia, treatment of hemorrhage in. H. Hahn 416
Hemoptysis, emetine in. C. Flandin 669
Saline infusion in. H. Müller 670
Treatment of. Thompson Frazer 111
Hemorrhage from bone, arrest of. G. T. Vaughan 290
In hemophilia, treatment of. H. Hahn 416
Treatment of. E. Schreiber 670
Of gastrointestinal. I. Boas 351
Hemorrhoids, injection treatment of. G. A. Humphreys 351
Treatment of. A. F. Plicque 166
Hepatic cirrhosis, duodenal alimentation in. Max Einhorn 736
Treatment of. N. S. Davis, Jr. 548
Hernia and other bowel obstruction, a therapeutic resource in. William Francis Waugh 167
In infants, treatment of. W. B. Jennings .. 353
Results of filigree implantation in. Lawrie McGavin 417
Umbilical, in children, radical cure of. Brun 305
Hexamethylenamine, observations on the action of. O. R. T. L'Esperance and Hugh Cabot 237
Uses of, in intestinal and biliary affections. G. P. La Roque 608
High-pressure hypertrophy of heart. David Riesman 288
Hip, intracapsular fracture of, treatment. G. G. Davis 41
Treatment of congenital dislocation of. C. L. Washburne 670
Hydrochloric acid secretion of stomach, influence of sodium chloride on. A. L. Benedict 354
Hydrogen peroxide in ophthalmology. P. A. Harry 612
Hydrotherapy in pellagra. G. M. Niles 613
Hygiene, reconstructive personal. J. Madison Taylor 274, 340
Hyperchlorhydria, alkalies and. P. C. Tupper. 167
Hypersensitiveness to quinine and bromine. E. Manolioff 300
Hypertension, arterial, sodium nitrite in. W. H. Porter 65
Hypertrophy of heart, high-pressure. David Riesman 288
Hyposecretion of the thyroid, some common types of. O. T. Osborne 261
Hysterectomy, indications for. John B. Deaver 290

Ichthyol and phenol in otitis. R. M. Nelson . 488
Treatment of whooping-cough. Naamé 306
Idiopathic epilepsy, treatment of. G. C. Bolten 735
Ileocolitis, dietetic treatment of. C. G. Grulee. 168
Illuminating-gas poisoning, treatment of. Robert S. McCombs 44
Incipient pulmonary tuberculosis, diagnosis and treatment of. D. B. Lees 54
Index of acidosis, an. T. S. Hart 45
Indicanuria. W. G. Morgan 169
Indications for hysterectomy. John B. Deaver. 290
For removal of faucial tonsil. W. H. Tomlinson 235
Indurated acne, treatment of. C. J. Hallperin. 609
Indurative headache and its treatment. C. C. Beling 291
Infancy, typhoid fever in. J. P. Crozer Griffith 57
Infantile diarrhea, treatment of. H. B. Day . 473
R. O. Clock 610
Gastrointestinal disturbance, constipation in. H. M. Freeburg 292
Infection, lymphocytosis of. R. C. Cabot 357
Infectious diseases, oral treatment in. C. E. Field 417
Endocarditis. E. W. Rosenow 476
Influence of sodium chloride on hydrochloric acid secretion of stomach. A. L. Benedict 354
Influenza, treatment of. Glenn I. Jones 111
Injection treatment of hemorrhoids. G. A. Humphreys 351
Internal secretion of mammary glands. Schiffmann and Vystavel 483
Interpretation of results of Wassermann test. C. F. Craig 367
Interrelation of the nervous system and the ductless glands. W. C. Bennett 217
Intestinal affections, hexamethylenamine in. G. P. La Roque 608
Motility, effects of drugs on. Roger Glénard. 671
Stasis, liquid paraffin in treatment of. R. Murray Leslie 736
Intracapsular fracture of the hip, treatment of. G. G. Davis 41
Intraocular inflammation, treatment of accessory sinuses in. W. S. Manning 112
Intravenous ether-salt solution anesthesia. L. W. Jenkins 112
Injections of theobromine sodium salicylate. S. Neuhof 743
Intussusception in infants, symptoms of. L. Miller Kahn 671
Inunction treatment of measles. D. I. Connolly 239
Inversion of uterus, treatment of. W. Zangemeister 354
Iodine in treatment of wounds. T. G. Orr ... 619
In typhoid fever. M. Arnozan and J. Carles.. 304
Organic preparations, value of. F. C. McLean 172
Use of, in ophthalmology. Dewaele 237
Itemized or aggregate charges for medical services. A. L. Benedict 279

Joint disease, chronic, treatment of. Ralph Pemberton 45
Juvenile delinquency. E. Bosworth McCready. 145

Digitized by Google

Kidney inflammation, diagnosis of. F. M. Pottenger 418
Tuberculosis of, diagnosis. F. E. Keene and J. L. Laird 743

Lactic acid bacilli in treatment of diabetes mellitus. P. Horwitz 234
Labor, management of prolonged. R. C. Norris 49
Preservation of perineal integrity in. A. C. King 293
Labyrinth, suppuration of, diagnosis. G. M. Coates 655
Laryngeal tuberculosis, submucous cauterization in. R. Pettit 237
Treatment of. St. Clair Thomson 355
Laryngectomy, technique of. Durand 481
Laryngitis, relief of dysphagia in tuberculous. Hinsberg 418
Lead poisoning, treatment of. Sir Thomas Oliver 737
Leg ulcers, treatment of. B. N. Wade 356
Leprosy, salvarsan in. Creighton Wellman . 114
Lesions of subacute bacterial endocarditis. Libman 40
Leukemia, benzol in. G. Kiralyfi 114
Aubertin 418
Treatment of. Frank Billings 293
Life-cycle of organism of syphilis. J. E. R. McDonagh 51
Liquid paraffin in treatment of intestinal stasis. R. M. Leslie 736
Lobar and lobular pneumonia, recent improvements in the quinine treatment of. S. Solis-Cohen 705
Pneumonia, treatment of. E. E. Cornwall .. 175
Local anesthesia in operations upon rectum. J. F. Saphir 241
Anesthetic action of magnesium sulphate. B. Wiki 170
New. Unger 170
Treatment of edema. Pathault 40
Paul Carnot 475
Locomotor ataxia, electric and other drugless treatments of. Louis von Cotzhausen 460
Ludwig's angina, treatment of. Samuel H. Brown 737
Luminal, toxic effects from. F. J. Farnell .. 549
Lupus vulgaris, treatment of. W. J. Manning 672
Lymphocytosis of infection. R. C. Cabot 357

Magnesium sulphate, local anesthetic action of. B. Wiki 170
Treatment of puerperal streptococcemia. J. A. Harrar 676
Malaria, treatment of. W. M. James 610
Malarial infection, treatment of relapses in. Beverley Robinson 672
Malnutrition and atrophy of infants, treatment of. John Foote 482
Mammary glands, internal secretion of. Schiffmann and Vystavel 483
Management of prolonged labor. R. C. Norris. 49
Manner of giving salvarsan. H. L. Arnold ... 424
Marasmus, topical use of codliver oil in. T. N. Gray 114
Massage in gonorrheal rheumatism. H. F. Wolf 547
In treatment of children. John Phillips 294
Means of facilitating version. A. F. A. King.. 682
Measles, diagnosis of. Herman B. Sheffield ... 737
Inunction treatment of. D. I. Connolly 239
Meatotomy. Edgar G. Ballenger and Omar F. Elder 357
Medical treatment of cholelithiasis. H. B. Anderson 641
Of gastric and duodenal ulcer. Louis M. Gompertz 139
Medicated baths in treatment of skin affections. H. Gougerot 615
Medicinal doses of aconite, effects of, upon the pulse rate. R. D. Rudolf 223
Meninges, permeability of, to arsenic. J. Tinel and J. Leroide 419
Meningitis, antistreptococcic serum used in. Juarros 611
Epidemic, in young children. Henry Koplik . 477
Mental suggestion, present status of. J. D. Quackenbos 597

Mercury and sulphur internally in the treatment of pneumonias. Louis Kolipinski. 398
Mesothorium. Nobl 673
Metabolism and growth, effects of ductless glands upon. E. A. Schäfer 163
Method of arresting epistaxis, simple. Ritschl. 165
Milk-free treatment of typhoid fever. W. N. Johnson and C. C. Watt, Jr. 181
Mine sanitation. Nathaniel P. Brooks 203
Modern methods of drug standardization. F. E. Stewart, with the collaboration of A. Parker Hitchens, W. F. Elgin, Chas. E. Vanderkleed, and P. S. Pittenger . 9, 83, 147
Modification of Russo's test for typhoid fever. Lester Neuman and E. B. Behrend 429
Mumps, blood and cerebrospinal fluid in. A. Feiling 673
Prophylaxis of. G. L. Petrilli 673
Muscular rheumatism, treatment of. K. A. Meyer 484
Tissues adapted to physiological standardization, application of some. F. E. Stewart and P. S. Pittenger 526
Myatonia congenita. Alfred Gordon 193

Narcotic addiction, treatment of. Alexander Lambert 485
Nasal mucosa, experiment to test the effect of oil of orange on. G. O. Jarvis and Albert Abrams 7
Neck, tuberculous glands of, treatment. J. S. Brown 303
Neosalvarsan. Bayet 115
And salvarsan, administration of, by enterocl ysis. Ludwig Oulmann and J. L. Wollheim 742
Administration of. O. L. Suggett 419
J. R. Thrasher and Bernard Erdman 486
Death after injections of. G. Lévy 239
Subcutaneous injection of. Wilhelm Wechselmann 738
Nephritis, acute, treatment of. Carl von Noorden 231
Toxic, renal decapsulation in. G. Tisserand. 295
Chronic, treatment of. Carl von Noorden .. 357
In children, proctoclysis in acute. H. Lowenburg 171
Nerves, effects of alcohol when injected into. L. Bériel and A. Devic 36
Nervous symptoms of pelvic disease. F. X. Dercum 321
System and the ductless glands, interrelation of the. W. C. Bennett 217
Examination of cerebrospinal fluid in disease of central. Oscar Berghausen 295
Spirochæta pallida in the central. Noguchi. 420
Neuralgia, treatment of. Zimmern, Cottenot, and Dariaux 612
Neuritis, treatment of. Hirtz 420
Nevi, radium in treatment of. Foveau de Courmelles 172
New local anesthetics. Unger 170
Operation for rectal fistula. R. H. Barnes . 677
Reagent for detecting occult blood. R. F. Ruttan and R. H. M. Hardisty 46
Treatment for acute gonorrhea. O. L. Mulot. 481
Newborn, use of mucus extractor in asphyxia of. H. B. Oxenham 172
Non-tuberculous apical lesions. M. Fishberg . 487
Notes on diagnostic and therapeutic value of a new form of tuberculin. W. C. Lyons. 303
On the differentiation of cardiac arrhythmias and their treatment, with a new time-marker. Thomas E. Satterthwaite 129

Observations on the action of hexamethylenamine. O. R. T. L'Esperance and Hugh Cabot 237
Obstetrics and gynecology, pituitary extract in. S. Marx 741
Beta-imidazolylethylamine in. F. Jager 421
Pituitrin in. W. E. Welz 675
Use of pituitary extract in. C. B. Reynolds . 48
Occult blood, new reagent for detecting. R. F. Ruttan and R. H. M. Hardisty 46
Oil of orange on the nasal mucosa, experiment to test the effect of. G. O. Jarvis and Albert Abrams 7
Oily injections of salvarsan. H. H. Hazen ... 423

Digitized by Google

Olive oil and gelatin in typhoid fever. Israel Bram 681
Uses of. Israel Bram 47
Operations upon rectum, local anesthesia in. J. F. Saphir 241
Ophthalmia, gonorrheal, treatment with gonococcus vaccines. W. K. Mittendorf 349
Ophthalmic and aural work, scarlet red in. J. Allan 359
Injuries, some points in the treatment of. Joseph A. White 240
Ophthalmology, hydrogen peroxide in. P. A. Harry 612
Use of iodine in. Dewaele 237
Oral treatment in infectious diseases. C. E. Field 417
Organic arsenicals, effect of, on oxyhemoglobin. R. Dalimier and J. Jacquemar . 488
Iodine preparations, value of. F. C. McLean. 172
Organotherapy, corpus luteum. Wilmer Krusen 162
In bronchial asthma. O. Weiss 296
In tuberculosis. Pierre Lereboullet 179
Otitis, phenol and ichthyol in. R. M. Nelson . 488
Media, chronic catarrhal, treatment of. Harold Hays 296
J. A. Stucky 297
Purulenta, treatment of. Samuel Theobald .116
Ovarian grafting, autoplastic. B. Whitehouse . 673
Oxygen, administration of, to the fetus. George P. Shears 739
Oxyhemoglobin, effect of organic arsenicals on. R. Dalimier and J. Jacquemar 488
Ozena and atrophic rhinitis, treatment of. Louis Jacobs 742

Palmar fascia, contraction of, and thyroid treatment. Gilbert 173
Pancreatic and gastric carcinoma, relationship between. E. A. Schumann 735
Pancreatitis, subacute and chronic, diagnosis and treatment of. Edward Archibald and E. J. Mullally 360
Panhysterectomy, acromegaly following. Goldstein 613
Papilloma and carcinoma, vesical. F. S. Watson 430
Partial chronic adrenal insufficiency in children. D'Œlsnitz 674
Pathology and bacteriology of acute rheumatic fever. Guthrie McConnell 515
Peculiar case of poisoning by calomel. H. Spindler 411
Pediatrics, uses of creosote carbonate in. Hunäns 162
Pediculi capitis, rapid extermination of. Arthur Whitfield 173
Treatment of. Jacob Sobel 739
Pellagra, gelsemium in. Roy Blosser 174
Hydrotherapy in. G. M. Niles 613
Specific treatment of. E. H. Martin 421
Treatment of. G. M. Niles 362
Pelvic adhesions, X-rays in treatment of. M. Fraenkel 740
Disease, nervous symptoms of. F. X. Dercum 321
Inflammations, chronic. Frank McMorrow ... 421
Pelvis, contracted, procedure for facilitating delivery in. G. Freudenthal 422
Pemphigus, treatment of. G. Praetorius 422
Perineal integrity in labor, preservation of. A. C. King 293
Perineum, protection of. Greer Baughman 488
Repair of. G. Baughman 549
Peritoneal adhesions, prevention of. D. P. D. Wilkie 298
Some newer notes on the subject of. R. T. Morris 513
Infection, ether in treatment of. Témoin .. 740
Peritonitis, treatment of. T. Hirano 740
Tuberculosis, and rachitis, differential diagnosis of. H. B. Sheffield 676
Permeability of meninges to arsenic. J. Tinel and J. Leroide 419
Pernicious anemia, etiology of. J. T. Pilcher. 550
Vomiting of pregnancy, treatment of. A. V. Lyon 59
Personal hygiene, reconstructive. J. Madison Taylor 274, 340
Pertussis, bacterin treatment of. John Zahorsky 48
Vaccine treatment of. G. D. Scott 174
Pharmacopœia, absurdities and commercialism of the proposed ninth decennial revision of the United States. O. T. Osborne ... 727
Phenol and ichthyol in otitis. R. M. Nelson.. 488
Philadelphia medical schools adopt a higher standard 162
Phosphorus in epilepsy. P. Leubuscher 348
In pulmonary tuberculosis. Ferguson Lemon. 674
Physical economics. Erastus Eugene Holt . 30, 89
Pineal tumor and early puberty. Apert 614
Pituitary body and carbohydrate metabolism. Lewis H. Weed, Harvey Cushing, and Conrad Jacobson 423
And diabetes insipidus. Simmonds 298
Differentiation between disorders of the two lobes of. Harvey Cushing 299
In epilepsy. G. C. Johnston 734
Functions of. E. A. Schäfer 551
Extract, continuous administration of. Musser 740
In obstetrics and gynecology 741
Use of. Chas. B. Reynolds 48
In rheumatic arthritis. C. Wallace and F. S. Child 731
Treatment of placenta prævia with. Trapl . 423
Pituitrin in obstetrics. W. E. Welz 675
Placenta prævia, treatment of, with pituitary extract. Trapl 423
Plague, bubonic: its history and prevention. V. J. P. Jourdan 270
Pleurisy, chronic, unrecognized pulmonary lesions in cases of suspected. C. M. Montgomery 257
Serofibrinous, autoserotherapy in. Maurice Fishberg 425
Pneumococcic pulmonary affections, camphorated oil in. Certain 299
Pneumonia, lobar, treatment of. E. E. Cornwall 175
And lobular, recent improvements in the quinine treatment of. S. Solis-Cohen .. 705
Mercury and sulphur internally in treatment of. Louis Kolipinski 398
Sodium citrate in treatment of. W. H. Weaver 116
Vaccine treatment in. W. N. Bispham 552
Poisoning, calomel, peculiar case of. H. Spindler 411
Illuminating-gas: treatment. R. S. McCombs. 44
Lead, treatment of. Sir Thomas Oliver 737
Veronal, case of. G. N. Pitt 492
Postanesthetic administration of glucose. Chauvin and Œconomos 553
Potassium cyanide poisoning, treatment of. Jona 553
Permanganate irrigations in urethritis. W. M. Barton 557
Pott's disease, treatment of, by bone grafting (Albee's operation). J. Torrance Rugh. 78
Pregnancy and diabetes, treatment of. R. W. Wilcox 385
And puerperium, treatment of pyelonephritis in. J. W. O'Connor 240
And tuberculosis. D. H. Stewart 175
Pernicious vomiting of: treatment. A. V. Lyon 59
Toxemia of: treatment. G. P. Shears 242
Green 556
Use of salvarsan during. Jeanselme 299
Present status of mental suggestion. John D. Quackenbos 597
Of tuberculin tests. C. B. Slade 679
Preservation of perineal integrity in labor. A. C. King 293
President's address. Noble P. Barnes 577
Prevention and surgical treatment of cancer. John A. McGlinn 135, 198
Of peritoneal adhesions. D. P. D. Wilkie ... 298
Procedure for facilitating delivery in contracted pelvis. G. Freudenthal 422
Proctoclysis, apparatus for. G. H. Tuttle 615
In acute nephritis in children. H. Lowenburg 171
Prolonged labor, management of. Richard C. Norris 49
Prophylaxis and treatment of rhus dermatitis. E. von Adelung 300

Digitized by Google

Of mumps. G. L. Petrilli 673
Prostate, carcinoma of. A. L. Wolbarst 473
Prostatic obstruction, relief of. A. R. Stevens . 676
Protection of perineum. Greer Baughman 488
Prurigo. Sir Malcolm Morris 50
Psoriasis, treatment of. Douglass W. Montgomery 176
J. Bressler 489
Puberty, early, and pineal tumor. Apert 614
Puerperal eclampsia, treatment of. G. Ealcher. 286
G. W. Kosmak 604
Infection, advanced treatment of. R. T. Gillmore 554
Streptococcemia, magnesium sulphate treatment of. J. A. Harrar 676
Puerperium and pregnancy, pyelonephritis in: treatment. J. W. O'Connor 240
Pulmonary affections, camphorated oil in pneumococcic. Certain 299
Intrathoracic injections in tuberculosis. V. D'Amico 617
Lesions in cases of suspected chronic pleurisy, unrecognized. C. M. Montgomery 257
Syphilis complicating pulmonary tuberculosis: its diagnosis, treatment, and prognosis. Frank Neall Robinson 333
Tuberculosis, albumin in sputum in. B. O. Works 117
Incipient, diagnosis and treatment of. D. B. Lees 54
Phosphorus in. Ferguson Lemon 674
Pulmonary syphilis complicating. F. N. Robinson 333
Treatment of. N. D. Bardswell 363
I. C. Voight 554
Treatment of cough in. Albert Robin 363
J. D. Blackwood, Jr. 680
Pulse rate, effects of medicinal doses of aconite upon the. E. D. Rudolf 223
Pyelonephritis in pregnancy and puerperium, treatment of. J. W. O'Connor 240
Pyogenic infections, carbuncles, and boils, sulphuric acid in treatment of. John Reynolds and R. J. Reynolds 284
Pyramidon in typhoid fever, effects of. Hirtz and Croissant 57

Quinine and bromine, hypersensitiveness to. E. Manoiloff 300
Rate of absorption. A. D. A. Webb 364
Treatment of lobar and lobular pneumonia, recent improvements in. S. Solis-Cohen. 705

Rachitis and tuberculous peritonitis, differential diagnosis of. Herman B. Sheffield 676
Radical cure of umbilical hernia in children. Brun 305
Radiotherapeutic treatment of sciatica. Delherm 365
Radium treatment of nevi. Foveau de Courmelles 172
Rapid extermination of pediculi capitis. Arthur Whitfield 173
Rate of absorption of quinine. A. D. A. Webb. 364
Rational method of treatment of carcinoma of the uterus. J. F. Percy 234
Therapy of syphilis. J. S. Eisenstaedt 52
Recent improvements in the quinine treatment of lobar and lobular pneumonia. Solomon Solis-Cohen 705
Reconstructive personal hygiene: the curative force of expert regulation of conduct. J. Madison Taylor 274, 340
Rectal feeding. A. Rendle Short and H. W. Bywaters 555
Fistula, new operations for. R. H. Barnes .. 677
Treatment of. C. G. Roehr 479
Rectum, operations upon, local anesthesia in. J. F. Saphir 241
Recurrent vomiting in children. A. C. Mercer. 618
Relationship between gastric and pancreatic carcinoma. E. A. Schumann 735
Relief of dysphagia in tuberculous laryngitis. Hinsberg 418
Of prostatic obstruction. A. R. Stevens 676
Removal of faucial tonsil, indications for. W. H. Tomlinson 235
Repair of perineum. G. Baughman 549
Report of a case of cat asthma. Horatio C. Wood, Jr. 326

Results of filigree implantation in hernia. Lawrie McGavin 417
Of tonsillectomy. B. de F. Sheedy 427
Of Wassermann test, interpretation of. C. F. Craig 367
Retropharyngeal abscess, acute. I. H. Alexander and H. Montague 677
Rheumatic arthritis, pituitary extract in. C. Wallace and F. S. Child 731
Fever, acute, pathology and bacteriology of. Guthrie McConnell 515
Rheumatism, gonorrheal, massage in. H. F. Wolf 547
Treatment of. J. Dardel 236
Muscular, treatment of. K. A. Meyer 484
Rhinitis, atrophic, treatment of. Douglas Macfarlan 732
And ozena, treatment of. Louis Jacobs ... 742
Rhus dermatitis, prophylaxis and treatment of. E. von Adelung 300
Russo's test for typhoid fever, modification of. Lester Neuman and E. B. Behrend 429

Sacroiliac relaxation after operation, labor, etc., therapeutics of. A. E. Gallant ... 70
Saline infusion in hemoptysis. H. Müller 670
Salvarsan and neosalvarsan, administration of, by enteroclysis. Ludwig Oulmann and J. L. Wollheim 742
During pregnancy, use of. Jeanselme 299
In chorea. Pierre Marie and C. Chatelin ... 38
In leprosy. Creighton Wellman 114
In scarlet fever. Schreiber 364
In syphilis, administration of. J. A. Fordyce. 177
Manner of giving. H. L. Arnold 424
Oily injections of. H. H. Hazen 423
Treatment, dangers and complications of. H. W. Bayly 490
Scarlet fever, salvarsan in. Schreiber 364
Scarlet red in ophthalmic and aural work. J. Allan 359
In the treatment of gastric and duodenal ulcer, effect of. J. Friedenwald and T. F. Leitz 329
Sciatica, appendicular. Enriquez and Gutmann. 472
Diet in the treatment of. E. L. Hunt 615
Radiotherapeutic treatment of. Delherm 365
Treatment of. M. J. Lewis and W. J. Taylor. 555
Scientific practice of chiropody 35
Senile period, functional psychoses of. A. C. Buckley 425
Serofibrinous pleurisy, autoserotherapy in. Maurice Fishberg 425
Sign indicative of chronic appendicitis. C. D. Aaron 283
Silicic acid in cancer. M. Benedikt 242
Simple and rapid way of filtering agar-agar. Michael G. Wohl 29
Method of arresting epistaxis. Ritschl 165
Of treating cholelithiasis. Gramme 602
Simplified von Pirquet test. Louis Shalet 745
Sinus suppuration, treatment of acute. H. B. Lemere 176
Sinuses, accessory, in intraocular inflammation, treatment of. W. S. Manning 112
Tuberculous, treatment of. W. S. Niblett ... 617
Skin affections, medicated baths in treatment of. H. Gougerot 615
Sodium bicarbonate in gastric affections, use of. A. Binet 480
Cinnamate. Jean Laborde 118
Citrate in treatment of pneumonia. W. H. Weaver 116
Nitrite in arterial hypertension. William Henry Porter 65
Some common types of hyposecretion of the thyroid. Oliver T. Osborne 261
New things in spondylotherapy. Albert Abrams 393
Newer notes on the subject of peritoneal adhesions. Robert T. Morris 513
Points in the treatment of ophthalmic injuries. J. A. White 240
Sore throat and diphtheria. Hyman I. Goldstein 336, 405
Spasm of the face, tic and. Alfred Gordon .. 426
Specific treatment of pellagra. E. H. Martin.. 421
Spinal anesthesia. J. W. H. Houghton 118
Dangers and disadvantages of. W. Wayne Babcock 659

Digitized by Google

Spirochæta pallida in the central nervous system. Noguchi 420
Spondylitis, treatment of, by bone grafting (Albee's operation). J. Torrance Rugh . 78
Spondylotherapy, some new things in. Albert Abrams 393
Spontaneous fracture as an early symptom of tabes dorsalis. H. L. Taylor 54
Sprain fracture an essential to occurrence of dislocation. George C. Ross and Lever Flegal Stewart 51
Standardization, modern methods of drug. F. E. Stewart, with the collaboration of A. P. Hitchens, W. F. Elgin, C. E. Vanderkleed, and P. S. Pittenger . 9, 83, 147
Stasis reaction in arteriosclerosis. C. Hertzell. 678
Stomach and duodenum, ulcer of, X-ray diagnosis of. Julius Friedenwald and F. H. Baetjer 744
Hydrochloric acid secretion of, influence of sodium chloride on. A. L. Benedict 354
Study of actinomycosis. McKenty 729
Subacute and chronic pancreatitis, diagnosis and treatment of. Edward Archibald and E. J. Mullally 360
Bacterial endocarditis, lesions of. Libman . 40
Subcutaneous injection of neosalvarsan. W. Wechselmann 738
Submucous cauterization in laryngeal tuberculosis. R. Pettit 237
Sugar in heart disease, use of. S. E. Denyer.. 548
Suggestions on treatment of wounds and fractures. W. W. Harper 119
Sulphur and mercury internally in the treatment of pneumonias. Louis Kolipinski . 398
Sulphuric acid in treatment of carbuncles, boils, and pyogenic infections. John Reynolds and R. J. Reynolds 284
Suppuration of the antrum of Highmore, chronic: treatment of. E. B. Gleason.. 392
Of the labyrinth, diagnosis of. G. M. Coates . 655
Suppurative foci, treatment of. C. Gabriel 678
Surgery of gastric cancer. W. J. Mayo 668
Surgical treatment of cancer, prevention and. J. A. McGlinn 198
Tuberculosis, trypsin treatment of. Wilhelm Baetzner 301
Tuberculin therapy in. T. W. Hastings ... 54
Symptoms of intussusception in infants. L. M. Kahn 671
Syphilis, administration of salvarsan in. John A. Fordyce 177
Cardiac involvement in. Harlow Brooks 679
Life-cycle of organism of. J. E. R. McDonagh 51
Pulmonary, complicating pulmonary tuberculosis. F. N. Robinson 333
Rational therapy of. J. S. Eisenstaedt 52

Tabes dorsalis, gastric disturbances in. W. F. Cheney 365
Spontaneous fracture as an early symptom of. Henry Ling Taylor 54
Talipes equinovarus at birth, cure of. A. R. Allen 178
Teachings of Dr. Abrams, an appreciation of the. J. Madison Taylor 395
Technique of laryngectomy. Durand 481
Tetanus, treatment of. Oliver Atkey 556
Tetany, treatment of. E. Kehrer 365
Theobromine sodium salicylate in bronchial asthma. Meyer and Cahn 179
Intravenous injections of. S. Neuhof 743
Therapeutic action of digitalis. A. R. Cushny, H. F. Marris, and M. D. Silberberg 108
Resource in hernia and other bowel obstruction. W. F. Waugh 167
Use of vaccines in typhoid fever. J. G. Callison 57
Therapeutics of sacroiliac relaxation after operation, labor, etc. A. Ernest Gallant 70
Therapy of syphilis, rational. J. S. Eisenstaedt 52
Throat, sore, and diphtheria. H. I. Goldstein . 336
Thymol as a tæniafuge. A. Artault 366
Thyroid, hyposecretion of, some common types of. O. T. Osborne 261
Treatment in contraction of palmar fascia. Gilbert 173
Tic and spasm of the face. Alfred Gordon ... 426
Tinnitus aurium, treatment of. B. Alexander Randall 491
Tonsil, faucial, indications for removal of. W. H. Tomlinson 235
Tonsillectomy, results of. B. de F. Sheedy .. 427
Topical use of codliver oil in marasmus. T. N. Gray 114
Torpor recti and dyschezia. Gustav Singer ... 475
Toxemia of pregnancy, treatment of. G. P. Shears 242
Green 550
Toxic effects from luminal. F. J. Farnell 549
Trachoma, treatment of. W. H. Harrison 428
Treatment and diagnosis of incipient pulmonary tuberculosis. D. B. Lees 54
And prophylaxis of rhus dermatitis. E. von Adelung 300
Of abortion. V. W. Harrison 282
Of accessory sinuses in intraocular inflammation. W. S. Manning 112
Of acne. E. D. Chipman 283
Of actinomycosis, X-ray. R. Levy 472
Of acute appendicitis in children. H. E. S. Stiven 37
Of acute gonorrhea, new. O. L. Muiot 481
Of acute nephritis. Carl von Noorden 231
Of acute sinus suppuration. H. B. Lemere .. 176
Of albuminuria in childhood. Galliot 35
Of anemia. W. H. Wilcox 730
Of arteriosclerosis. Carl von Noorden 346
Louis Faugeres Bishop 449
Of asthma. Justus Matthews 663
Bronchial. C. Stäubli 284
Uncomplicated. Bernard Oettinger 37
Of atrophic rhinitis. Douglas Macfarlan 732
And ozena. Louis Jacobs 742
Of burns. E. T. C. Milligan 410
Frank Levinson 602
Of cancer, surgical. J. A. McGlinn 135, 198
Of carbuncles, boils, and pyogenic infections with sulphuric acid. John Reynolds and R. J. Reynolds 284
Of carcinoma of uterine cervix. H. A. Kelly and J. C. Neel 602
Of the uterus, rational method of. J. F. Percy 234
Of cardiac arrhythmias. T. E. Satterthwaite . 129
Of children, massage in. John Phillips 294
Of cholelithiasis. Gramme 602
Medical. H. B. Anderson 641
Of chronic bronchitis. J. J. Walsh 663
Joint disease. Ralph Pemberton 45
Nephritis. Carl von Noorden 357
Suppuration of the antrum of Highmore (with exhibition of a new instrument). E. B. Gleason 392
Of Colles's fracture. A. O. Wilensky 732
Of congenital dislocation of hip. C. L. Washburne 670
Of contraction of palmar fascia by thyroid. Gilbert 173
Of cough in tuberculosis. W. S. Gordon 119
Albert Robin 363
J. B. Blackwood, Jr. 680
Of cystitis in women. F. W. Griffith 603
Of diabetes and pregnancy. Reynold Webb Wilcox 385
Of diabetes mellitus. A. J. Hodgson 39
In the elderly. A. Lorand 412
Lactic acid bacilli in. P. Horwitz 234
Of diphtheria carriers. Henry Albert 733
Of duodenal ulcer. Max Einhorn 665
Of dysentery in institutions. Henry A. Jones. 163
Of eczema. A. Ravogli 547
Of edema, local. Pathault 40
Paul Carnot 475
Of epidemic diarrhea of infants. John Allan . 666
Of epididymitis. L. S. Eckels 734
Of epithelioma by ethyl chloride. Harold Seidelin 605
Of erysipelas. F. S. Arnold 479
Of esophageal carcinoma. S. Fradiss 109
Of felons. G. M. Dorrance 606
Of fissured anus. Aslett Baldwin 109
Of fistula in ano. P. L. Mummery 668
Of fractures of forearm. G. W. Miel 165
Of furuncles. P. G. Skillern 607
Of gangrene of the foot. M. Borchardt, Moszkowicz, and Frank 348

Digitized by Google

Of gas bacillus infection. W. C. Cramp 42
Of gastric dilatation. A. Frick 480
And duodenal ulcer, effect of scarlet red in. J. Friedenwald and T. F. Leitz 329
Medical. L. M. Gompertz 139
Hyperacidity, bile in. K. Glässner 669
Ulcer. J. Garnett Nelson 165
Mathieu and Giraud 414
Perforated. E. M. Corner 414
Of gastrointestinal hemorrhage. I. Boas 351
Of gastroptosis. E. L. Kellogg 415
Of goiter. C. H. Mayo 607
Of gonococcal urethritis in the male. V. C. Pedersen 306
Of gonorrheal rheumatism. J. Dardel 236
Of gout. G. L. Kahlo 350
Of gunshot wounds. F. Griffith 110
Of headache. A. Lorand 237
Of hemoptysis. Thompson Grazer 111
Of hemorrhage. E. Schreiber 670
In hemophilia. H. Hahn 416
Of hemorrhoids. A. F. Plicque 166
Injection. G. A. Humphreys 351
Of hepatic cirrhosis. N. S. Davis, Jr. 548
Of hernia in infants. W. B. Jennings 353
Of idiopathic epilepsy. G. C. Bolten 735
Of ileocolitis, dietetic. C. G. Grulee 168
Of illuminating-gas poisoning. R. S. McCombs 44
Of indurated acne. C. J. Halperin 609
Of infantile diarrhea. H. B. Day 473
R. O. Clock 610
Of influenza. Glenn I. Jones 111
Of intestinal stasis with liquid paraffin. R. M. Leslie 736
Of intracapsular fracture of the hip. G. G. Davis 41
Of inversion of uterus. W. Zangemeister .. 354
Of laryngeal tuberculosis. St. Clair Thomson 355
Of lead poisoning. Sir Thomas Oliver 727
Of leg ulcers. B. N. Wade 356
Of leukemia. Frank Billings 293
Benzol. Aubertin 418
Of lobar and lobular pneumonia, recent improvements in the quinine. S. Solis-Cohen 705
Pneumonia. E. E. Cornwall 175
Of locomotor ataxia, electric and other drugless. Louis von Cotzhausen 460
Of Ludwig's angina. S. H. Brown 737
Of lupus vulgaris. W. J. Manning 672
Of malaria. W. M. James 610
Of malnutrition and atrophy of infants. John Foote 482
Of measles, inunction. D. I. Connolly 239
Of muscular rheumatism. K. A. Meyer 484
Of narcotic addiction. Alexander Lambert . 485
Of neuralgia. Zimmern, Cottenot, and Darlaux 612
Of neuritis. Hirtz 420
Of nevi, radium in. Foveau de Courmelles ... 172
Of ophthalmic injuries, some points in. J. A. White 240
Of otitis media, chronic catarrhal. Harold Hays 296
J. A. Stucky 297
Purulenta. Samuel Theobald 116
Of pancreatitis, subacute and chronic. Edward Archibald and E. J. Mullally 360
Of pediculosis capitis. Jacob Sobel 739
Of pellagra. G. M. Niles 362
Specific. E. H. Martin 421
Of pelvic adhesions, X-rays in. M. Fraenkel. 740
Of pemphigus. G. Praetorius 422
Of peritoneal infection, ether in. Témoin ... 740
Of peritonitis. T. Hirano 740
Of pernicious vomiting of pregnancy. A. V. Lyon 59
Of pertussis, bacterin. John Zahorsky 48
Vaccine. G. D. Scott 174
Of placenta prævia with pituitary extract. Trapl 423
Of pneumonia, sodium citrate in. W. H. Weaver 116
Vaccine. W. N. Bispham 552
With mercury and sulphur internally. Louis Kolipinski 398
Of potassium cyanide poisoning. Jona 553
Of psoriasis. D. W. Montgomery 176
J. Bressler 489
Of puerperal eclampsia. G. Ealcher 286
G. W. Kosmak 604
Infection, advanced. R. T. Gillmore 554
Streptococcemia by magnesium sulphate. J. A. Harrar 676
Of pulmonary tuberculosis. N. D. Bardswell. 363
I. C. Voight 554
Of pyelonephritis in pregnancy and puerperium. J. W. O'Connor 240
Of rectal fistula. C. G. Roehr 479
Of relapses in malarial infection. Beverley Robinson 672
Of sciatica. M. J. Lewis and W. J. Taylor . 555
Diet in. E. L. Hunt 615
Radiotherapeutic. Delherm 365
Of skin affections, medicated baths in. H. Gougerot 615
Of spondylitis (Pott's disease) by bone grafting (Albee's operation), with report of eight cases. J. Torrance Rugh 78
Of suppurative foci. C. Gabriel 678
Of surgical tuberculosis, trypsin. Wilhelm Baetzner 301
Of tetanus. Oliver Atkey 556
Of tetany. E. Kehrer 365
Of tinnitus aurium. B. Alexander Randall.. 491
Of toxemia of pregnancy. G. P. Shears 242
Green 556
Of trachoma. W. H. Harrison 428
Of tuberculosis. C. Am Ende 491
A. B. Jackson 680
Climatic conditions in California: their influence on the. G. H. Evans 520
Tuberculin in. Meyer Solis-Cohen 680
Of tuberculous glands of neck. J. S. Brown. 303
Sinuses. W. S. Niblett 617
Of typhoid fever, milk-free. W. N. Johnson and C. C. Watt, Jr. 181
Vaccine. W. H. Watters 682
Of urethritis in general paralysis. Henry Baird 242
Of urticaria, epinephrin in. A. W. Swann .. 164
Of vaccinal ulcers. Sexton 492
Of Vincent's angina. T. H. Halstead 58
C. C. Sutter 366
Of whooping-cough, ichthyol. Naamé 306
Vaccine. E. Mather Sill 493
Of wounds and fractures, suggestions on. W. W. Harper 119
Grape-sugar in. Magnus 618
Tincture of iodine in. T. G. Orr 619
Trypsin treatment of surgical tuberculosis. Wilhelm Baetzner 301
Tuberculin, notes on diagnostic and therapeutic value of a new form of. W. C. Lyons . 303
Tests, present status of. C. B. Slade 679
Therapy in surgical tuberculosis. Thomas Wood Hastings 54
Treatment in tuberculosis. Meyer Solis-Cohen 680
Tuberculosis and pregnancy. D. H. Stewart ... 175
Climatic conditions in California: their influence on the treatment of. G. H. Evans 520
Diagnosis and treatment of. C. Am Ende ... 491
Of incipient pulmonary. D. B. Lees 54
External use of water for enhancing resistance in. Simon Baruch 56
Laryngeal, submucous cauterization in. R. Pettit 237
Treatment of. St. Clair Thomson 355
Of the kidney, diagnosis of. F. E. Keene and J. L. Laird 743
Organotherapy in. Pierre Lereboullet 179
Pulmonary, albumin in sputum in. B. O. Works 117
Intrathoracic injections in. V. D'Amico ... 617
Pulmonary syphilis complicating. F. N. Robinson 333
Phosphorus in. Ferguson Lemon 674
Treatment of. N. D. Bardswell 363
I. C. Voight 554
Surgical, trypsin treatment of. Wilhelm Baetzner 301
Tuberculin therapy in. T. W. Hastings ... 54
Treatment of. A. B. Jackson 680

Digitized by Google

Cough in. W. S. Gordon 119
Albert Robin 363
J. D. Blackwood, Jr. 680
Tuberculin treatment in. Meyer Solis-Cohen. 680
Use of creosote in. Maurice Fishberg 180
Tuberculous glands of neck, treatment of. J. S. Brown 303
Laryngitis, relief of dysphagia in. Hinsberg.. 418
Patient, what does treatment offer to the advanced? F. M. Pottenger 583
Peritonitis and rachitis, differential diagnosis of. H. B. Sheffield 676
Sinuses, treatment of. W. S. Nibiett 617
Two types of acidosis. Allan Eustis 663
Typhoid appendicitis. F. Fazio 181
Effects of pyramidon in. Hirtz and Croissant 57
Gelatin and olive oil in. Israel Bram 681
In infancy. J. P. Crozer Griffith 57
Iodine in. M. Arnozan and J. Carles 304
Milk-free treatment of. W. N. Johnson and C. C. Watt, Jr. 181
Modification of Russo's test for. Lester Neuman and E. B. Behrend 429
Therapeutic use of vaccines in. James G. Callison 57
Vaccination. Young 492
Vaccine treatment of. W. H. Watters 682

Ulcer, gastric. See Gastric Ulcer.
Leg, treatment of. B. N. Wade 356
Stomach and duodenum, X-ray diagnosis of. Julius Friedenwald and F. H. Baetjer .. 744
Vaccinal, treatment of. Sexton 492
Umbilical hernia in children, radical cure of. Brun 305
United States Pharmacopœia, absurdities and commercialism of the proposed ninth decennial revision of the. Oliver T. Osborne 727
Unrecognized pulmonary lesions in cases of suspected chronic pleurisy. Charles M. Montgomery 257
Urethritis in general paralysis and its treatment. Henry Baird 242
Potassium permanganate irrigations in. W. M. Barton 557
Treatment of gonococcal, in the male. V. C. Pedersen 305
Urticaria, epinephrin in treatment of. A. W. Swann 164
Uses of creosote carbonate in pediatrics. Hunâns 162
In tuberculosis. Maurice Fishberg 180
Of hexamethylenamine in intestinal and biliary affections. G. P. La Roque 608
Of iodine in ophthalmology. Dewaele 237
Of olive oil. Israel Bram 47
Of mucus extractor in asphyxia of newborn. H. B. Oxenham 172
Of paste of zinc oxide. H. S. Hiden 182
Of pituitary extract in obstetrics. C. B. Reynolds 48
Of salvarsan during pregnancy. Jeanselme . 299
Of sodium bicarbonate in gastric affections. A. Binet 480
Of sugar in heart disease. S. E. Denyer ... 548
Uterine cancer, diagnosis of. R. B. Hall 744
Cervix, carcinoma of: treatment. H. A. Kelly and J. C. Neel 602
Uterus, carcinoma of, rational method of treatment of. J. F. Percy 234
Inversion of: treatment. W. Zangemeister . 354

Vaccinal ulcers, treatment of. Sexton 492
Vaccination, typhoid. Young 492
Vaccine therapy, current developments and problems in. A. Parker Hitchens 590
Treatment of pertussis. G. D. Scott 174
Of pneumonia. W. N. Bispham 552
Of typhoid fever. W. H. Watters 682
Of whooping-cough. E. Mather Sill 493
Vaccines in typhoid fever, therapeutic use of. J. G. Callison 57
Value of organic iodine preparations. F. C. McLean 172
Veronal poisoning, case of. G. N. Pitt 492
Version, a means of facilitating. A. F. A. King 682
Vesical papilloma and carcinoma. F. S. Watson 430
Vincent's angina, treatment of. Thomas Halstead 58
C. C. Sutter 366
Vomiting of pregnancy, treatment of pernicious. A. V. Lyon 59
Recurrent, in children. A. C. Mercer 618
Von Pirquet test, simplified. Louis Shalet 745

Wassermann test, contradictory findings in. A. L. Wolbarst 367
Interpretation of results of. C. F. Craig .. 367
Water, external use of, for enhancing resistance in. Simon Baruch 56
What does treatment offer to the advanced tuberculous patient? Francis Marion Pottenger 583
Whooping-cough, ichthyol treatment of. Naamé 306
Vaccine treatment of. E. Mather Sill 493
Wounds and fractures, suggestions on treatment of. W. W. Harper 119
Grape-sugar in the treatment of. Magnus .. 618
Tincture of iodine in treatment of. T. G. Orr 619

X-ray diagnosis of ulcer of stomach and duodenum. Julius Friedenwald and F. H. Baetjer 744
In dermatology. Mulford K. Fisher 716
Treatment in actinomycosis. R. Levy 472
Treatment of pelvic adhesions. M. Fraenkel. 740

Zinc oxide, uses of a paste of. H. S. Hiden .. 182

CLINICAL SUMMARY.

Clinical Summary, 121, 183, 243, 307, 369, 431, 494, 558, 620, 683, 746

CORRESPONDENCE.

Letter from Seneca Egbert 250
Treatment of alcoholism. H. S. Jones 635

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